

**SO Incentives**  
**National Grid Gas (NTS) Consultation on**  
**Shrinkage and Residual Balancing Issues**  
**A paper for the Gas Forum**  
**September 2008**  
**19.09.08**

## **SO Incentives**

### **National Grid Gas (NTS) Consultation on Shrinkage and Residual Balancing Issues**

#### **A paper for the Gas Forum**

### **Executive summary**

#### **Introduction**

Ofgem has asked NG (National Grid Gas (NTS)) to lead on the consultation process for SO incentives to apply from April 2009. NG commenced the process with a workshop in June 2008 and recently published a follow-up consultation document<sup>1</sup> on the shrinkage and residual balancing schemes setting out a number of questions regarding scheme objectives and other issues.

The Gas Forum has engaged TPA Solutions to follow the SO Incentives development process and as part of this we have reviewed and assessed the issues raised in the recently published consultation document.

#### **Residual balancing and shrinkage roles**

Before considering the consultation issues raised by NG we have looked at the distinction between NG's residual balancing and shrinkage provision roles under the existing Uniform Network Code rules, as this provides a helpful backdrop when addressing the detail of, and potential changes to, the incentive schemes.

The existence of a separate user account for NTS shrinkage ensures a distinction is maintained between provision of gas for residual balancing purposes and for those operational needs of the system covered by NTS shrinkage (compressor fuel, CV shrinkage and UAG).

However, this distinction is less clear-cut in the case of the "operational requirements" associated with both NTS and GDN linepack changes, because the quantities are not assigned to a user account in the same way as shrinkage.

We conclude that potentially, operational requirements for NTS and GDN linepack changes could give rise to (or exacerbate the need for) residual balancing actions, but under the existing arrangements the costs remain untargeted via imbalance charges.

The extent to which these features of the existing regime might be regarded as problematic, and if so, the means by which the issues arising might be addressed, are considered in conjunction with the consultation issues raised by NG in section 3.

#### **Residual balancing incentive**

We have reviewed the form and operation of the price performance and linepack elements of the existing residual balancing incentive scheme.

A generally accepted objective of the scheme is that it should encourage minimisation of residual balancing actions, and ensure as far as possible that any necessary transactions are close to market prices. We believe that the price

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<sup>1</sup> National Grid Gas (NTS), SO Incentives for 1 April 2009, Consultation on Shrinkage and Residual Balancing Incentive Issues, Issued 22 August 2008

performance measure is a structurally sound element of the scheme that contributes to this objective and should therefore be retained, although the parameters could be revisited once the approach on the linepack element becomes clearer.

The key high level issue raised by NG is whether the objective of avoiding the transfer of imbalances from day to day should be retained – in other words, does some form of linepack measure within the scheme remain appropriate? The alternative described by NG would involve it trading “against the physical requirements of the system, thereby potentially resolving imbalances on different days”.

Overall, we believe removal of the linepack measure completely would afford NG wide discretion in terms of the carry through of imbalances, potentially leading to reduced predictability of residual balancing actions, less transparency as to cause, and an increase in untargeted (or inappropriately targeted) costs. We believe that concerns with the existing regime might be better addressed by adjusting the level of the tolerances and payout structure, rather than by removing the linepack measure altogether.

This is not to say that the linepack arrangements should necessarily be retained in their existing form. We think the “zero linepack change” philosophy embedded in the current scheme (and designed to minimise carryover of gas from day to day) misaligns operational and incentive goals. We believe that setting the incentive scheme linepack target for each day to reflect, as far as possible, operational requirements (which are generally related to demand) may prove beneficial as it would tend to correct this misalignment and provide market participants with better information on system status (short or long).

We suggest a another possible refinement which relates to the more rigorous accounting treatment for NTS linepack changes, involving assignment of operationally required NTS linepack changes to an NG user account. The account could be cashed out on an occasional basis (say annually) to reflect absolute changes in linepack levels over the period. Alternatively, the changes could be dealt with on a daily basis in a similar manner to shrinkage. NG would then source or dispose of gas daily to meet its linepack change requirements, separately from its residual balancing role. This could be expected to reduce the incidence of residual balancing actions compared with today’s arrangements, in line with one of the key objectives of the incentive scheme. A similar treatment could be considered for GDN linepack changes, depending on the quantities involved and the associated value.

The other issues raised by NG concern duration, where we feel the potential for annual review is appropriate, and information quality, where we believe incorporation into the scheme could detract from the important objectives that the price performance and linepack components are designed to achieve.

### **Energy transfer service**

NG has outlined the concept of an inter-day imbalance transfer service and is seeking views as to whether this is something which should be considered for further development. At face value, this is a commercial product which any party could offer to the market, and which could in theory help market efficiency.

The product concept is still only embryonic and loosely articulated, which makes it difficult to be definitive about the risks and other implications.

However, we have attempted to draw out some important interactions and possible consequences of NG offering such a product, summarised below:

Our initial review suggests that the key issue appears to be the potential for an energy transfer product to adversely interact with NG's residual balancing role. Any future development of this concept would need to squarely address this important concern.

We believe that a daily product is likely to be 'self-defeating', in that the times when it is most likely to have value to Shippers is the time when NG is least likely to be in a position to release it.

It has the capability to add significant risk and volatility into the operation of the market.

We do not think this need be an issue for the incentives from April 2009. It can be considered separately and on a different timescale, although consideration of associated incentive arrangements and balancing rules would definitely have to be an intrinsic part of any development of this product.

### **NTS Shrinkage – Fuel minimisation as an objective**

The general purpose of incentive schemes is to encourage NG to make efficient trade-offs between potentially conflicting operational considerations, for the overall benefit of the Industry. The schemes need to be considered in the round, and the parameters of the various schemes should be set with their relationship to each other in mind, and so as to articulate priorities and encourage preferred NG behaviour.

NG suggests that it has other operational considerations that could be better optimised without a fuel minimisation objective under the Shrinkage Incentive. We believe that the current wider incentive framework provides NG appropriate opportunities to trade-off between costs associated with, for example, capacity buy-back costs, and shrinkage incentive payments.

NG has not indicated any specific areas which could be improved upon or quantified any benefits which might be associated with removing the fuel minimisation objective. Were such specific areas to be identified and justified then they could potentially be reflected in adjusted incentive arrangements

We believe that fuel minimisation is an important objective in the incentive scheme, which works in conjunction with the price element to create an overall objective of cost minimisation, which is an important aspect for Shippers

Without a fuel minimisation objective, NG would be unconstrained in its use of fuel, and might operate inefficiently as a result. We do not think Shippers would wish to fund such an arrangement.

### **Compressor fuel forecasting**

We believe that a development of the current 'target drivers' approach is in general an appropriate means of adjusting the target for outturn events, with the intention of limiting the scope for windfall gains or losses on volume under the Shrinkage incentive and increasing the focus of the incentive on the volumes which are not directly influenced by specific factors.

Similarly, developing the 'target drivers' for forecasting the central compressor fuel target within bands is appropriate at this time, in conjunction with input from network analysis and some additional statistical analysis.

However, we have concerns that a significant amount of further network analysis information and statistical analysis than appears to have been undertaken to date is required to ensure that this approach is robust.

With changing supply patterns, a significant consideration for future forecasting is likely to be the interaction with demand on the system, but it is probably too early to say how this should be incorporated into the forecasting process. Analysing the impact of Bacton IUK interconnector demand on compressor fuel might offer a starting point.

We believe that the TBE process is well established and is likely to represent the best supply and demand data available. Therefore we agree that this supply demand forecast should be used as the basis for compressor fuel forecasting.

### **Effective incentives for UAG**

We believe it is important that an incentive on minimising UAG volumes is retained.

We think there is merit in providing NG with an additional, appropriately sized (i.e. fairly strong), long term incentive for reductions in UAG volumes and a measure relating to volatility might also be appropriate.

We do not believe that the introduction of a new scheme should necessarily require the separation of UAG volumes from the Shrinkage Procurement incentive, as this is not a straightforward issue, because of the way in which shrinkage volumes are combined, smoothed and procured together by the Shrinkage Provider.

If a new UAG specific scheme were developed, then to avoid NG being incentivised twice on the same volumes, NG could be provided with a 'volume pass-through' under the procurement incentive. However, we do not believe it is necessary or helpful to use a prompt reference price specifically for UAG volumes, and we explain why this is the case.

Due to the recognisable need for any new UAG specific scheme to be longer term than the procurement incentive, the associated rewards for NG could be provided through the SO Commodity Charge or even through a rate of return arrangement. One possibility could be to maintain a downside risk only through the procurement incentive, and provide an upside opportunity through a separately funded scheme.

### **The Impacts of Electric Compression**

We think it is unlikely that it would be appropriate (or necessary at this point) for NG to become a wholesale supplier of electricity.

In relation to the ECRP we think that the approach currently being used is probably broadly appropriate.

It is very important that the volumes required and price setting periods in the purchase contracts are transparent, given that the requirements will change depending on progress with the electric compression installation programme,

If/When NG wishes to purchase volumes of very prompt electricity then it would be important to include a daily index price (eg: Heren or Spectron) within the construction of the ECRP.

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## **1. Introduction**

### **Consultation process for SO incentives**

- 1.1. Ofgem has asked NG (National Grid Gas NTS) to lead on the consultation process for SO incentives to apply from April 2009. NG commenced the process with a workshop in June 2008 and recently published a follow-up consultation document<sup>2</sup> on the shrinkage and residual balancing schemes setting out a number of questions regarding scheme objectives and other issues.
- 1.2. Based on feedback NG aims to publish Initial Proposals at the beginning of November 2008. NG will then report on the responses and in light of this Ofgem is expected to develop Final Proposals for consultation in early 2009.

### **TPA Solutions role**

- 1.3. The Gas Forum has engaged TPA Solutions to follow the SO Incentives development process and as part of this we have reviewed and assessed the issues raised in the recently published consultation document.

### **Structure of this paper**

- 1.4. This paper describes the outcome of our review and assessment.
- 1.5. Following this introduction we consider in section 2 the distinction between NG's residual balancing and shrinkage provision roles as this provides a helpful backdrop when addressing the detail of, and potential changes to, the incentive schemes.
- 1.6. Thereafter we look at the issues raised by NG, grouped under the following section headings:
  - Section 3: Residual balancing scheme
  - Section 4: Energy transfer service
  - Section 5: NTS shrinkage – Overview
  - Section 6: Compressor fuel
  - Section 7: Unaccounted for gas (UAG)
  - Section 8: Electric compression
- 1.7. At the start of each section we have provided an italicised summary of the main points emerging, which has also been used in the Executive Summary.

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<sup>2</sup> National Grid Gas (NTS), SO Incentives for 1 April 2009, Consultation on Shrinkage and Residual Balancing Incentive Issues, Issued 22 August 2008

## 2. Residual balancing and shrinkage provision roles

*Before considering the consultation issues raised by NG (National Grid Gas (NTS)) we have looked at the distinction between NG's residual balancing and shrinkage provision roles under the existing Uniform Network Code rules, as this provides a helpful backdrop when addressing the detail of, and potential changes to, the incentive schemes.*

*The existence of a separate user account for NTS shrinkage ensures a distinction is maintained between provision of gas for residual balancing purposes and for those operational needs of the system covered by NTS shrinkage (compressor fuel, CV shrinkage and UAG).*

*However, this distinction is less clear-cut in the case of the "operational requirements" associated with both NTS and GDN linepack changes, because the quantities are not assigned to a user account in the same way as shrinkage.*

*We conclude that potentially, operational requirements for NTS and GDN linepack changes could give rise to (or exacerbate the need for) residual balancing actions, but under the existing arrangements the costs remain untargeted via imbalance charges.*

*The extent to which these features of the existing regime might be regarded as problematic, and if so, the means by which the issues arising might be addressed, are considered in conjunction with the consultation issues raised by NG in section 3.*

### **Background**

- 2.1. There are some fundamental considerations regarding the distinction between residual balancing and shrinkage, and the way in which each is managed, that we believe it is useful to highlight at the outset, as an understanding of these issues will provide a helpful backdrop when addressing the detail of, and potential changes to, the incentive schemes.

### **Residual balancing role**

- 2.2. NG assumes its residual balancing role within a regime that incentivises (but does not oblige) shippers to balance daily, by cashing out end of day imbalances at market-related prices.
- 2.3. Intervention by NG as residual balancer, via OCM sales or purchases, is generally expected to be minimal and limited to the extent necessary to maintain a balance between quantities delivered to and offtaken from the system, taking account of a number of operational factors.
- 2.4. As a general principle, the costs incurred by NG in undertaking the residual balancing activity are expected to be funded through imbalance charges, although under the neutrality arrangements there is provision for any over or under-recovery to be recycled to shippers via neutrality charges.

### **NTS shrinkage provider role**

- 2.5. In its other role as NTS shrinkage provider, NG operates a user account under which NG balances the estimated shrinkage demands

via NBP purchases (or sales), and incurs imbalance charges (but not neutrality charges) to the extent it does not do so.

#### **Distinction between roles**

- 2.6. The existence of a separate user account for shrinkage imbalances ensures a distinction is maintained between the residual balancing activity and shrinkage provision.
- 2.7. Whilst a failure by NG to provide gas for shrinkage might give rise to a need for residual balancing actions, the residual balancing costs would (all other things being equal) be funded by the imbalance charges incurred under the shrinkage account.

#### **“Operational requirements” for linepack changes**

- 2.8. However, this distinction is less clear-cut in the case of the “operational requirements” associated with both NTS and GDN linepack changes gas.
- 2.9. There is the potential for gas to be sourced via residual balancing to meet the operational requirements but, because these changes are not assigned to a user account in the same way as shrinkage, there is no targeting of costs via imbalance charges.

#### **NTS linepack changes**

- 2.10. We distinguish here between NTS linepack changes required to accommodate shipper imbalances, which are part and parcel of residual balancing, and NTS linepack changes which are required for operational purposes – for example the need to operate at higher linepack levels on days when system demand is higher.
- 2.11. These operationally required changes are not currently accounted for in the same way as estimated shrinkage, in that the quantity is not assigned to a user account. The changes may therefore be sourced via the residual balancing mechanism, but with no targeting of costs via imbalance charges.
- 2.12. To illustrate this point, take the hypothetical situation where a 3 mcm linepack increase from the previous day’s optimum operational level is required, whilst over the day all shippers maintain a perfect balance between inputs and offtakes. NG may take a residual balancing action involving OCM purchases to effect the linepack change, but there are no imbalance charges to fund the costs of the balancing action which are therefore recovered by neutrality charges.

#### **GDN linepack changes**

- 2.13. A similar argument applies for GDN linepack changes, as under the existing UNC rules these changes, unlike GDN shrinkage, are not assigned to GDN user accounts. There is therefore the potential for increased residual balancing activity by NG to accommodate required GDN linepack changes, but no targeting of the associated costs.

## **Conclusion**

- 2.14. We conclude that potentially, operational requirements for NTS and GDN linepack changes could give rise to (or exacerbate the need for) residual balancing actions, but under the existing arrangements the costs remain untargeted via imbalance charges.
- 2.15. The extent to which this might be regarded as problematic, and if so, the means by which the issues arising might be addressed, are considered in the sections which follow in conjunction with the consultation issues raised by NG.

### **3. Residual balancing incentive**

*We have reviewed the form and operation of the price performance and linepack elements of the existing residual balancing incentive scheme.*

*A generally accepted objective of the scheme is that it should encourage minimisation of residual balancing actions, and ensure as far as possible that any necessary transactions are close to market prices. We believe that the price performance measure is a structurally sound element of the scheme that contributes to this objective and should therefore be retained, although the parameters could be revisited once the approach on the linepack element becomes clearer.*

*The key high level issue raised by NG is whether the objective of avoiding the transfer of imbalances from day to day should be retained – in other words, does some form of linepack measure within the scheme remain appropriate? The alternative described by NG would involve it trading "against the physical requirements of the system, thereby potentially resolving imbalances on different days".*

*Overall, we believe removal of the linepack measure completely would afford NG wide discretion in terms of the carry through of imbalances, potentially leading to reduced predictability of residual balancing actions, less transparency as to cause, and an increase in untargeted (or inappropriately targeted) costs. We believe that concerns with the existing regime might be better addressed by adjusting the level of the tolerances and payout structure, rather than by removing the linepack measure altogether.*

*This is not to say that the linepack arrangements should necessarily be retained in their existing form. We think the "zero linepack change" philosophy embedded in the current scheme (and designed to minimise carryover of gas from day to day) misaligns operational and incentive goals. We believe that setting the incentive scheme linepack target for each day to reflect, as far as possible, operational requirements (which are generally related to demand) may prove beneficial as it would tend to correct this misalignment and provide market participants with better information on system status (short or long).*

*We suggest a another possible refinement which relates to the more rigorous accounting treatment for NTS linepack changes, involving assignment of operationally required NTS linepack changes to an NG user account. The account could be cashed out on an occasional basis (say annually) to reflect absolute changes in linepack levels over the period. Alternatively, the changes could be dealt with on a daily basis in a similar manner to shrinkage. NG would then source or dispose of gas daily to meet its linepack change requirements, separately from its residual balancing role. This could be expected to reduce the incidence of residual balancing actions compared with today's arrangements, in line with one of the key objectives of the incentive scheme. A similar treatment could be considered for GDN linepack changes, depending on the quantities involved and the associated value.*

*The other issues raised by NG concern duration, where we feel the potential for annual review is appropriate, and information quality, where we believe incorporation into the scheme could detract from the important objectives that the price performance and linepack components are designed to achieve.*

### **The existing residual balancing incentive scheme**

- 3.1. The residual balancing incentive comprises two components; the price performance measure and the linepack performance measure.
- 3.2. The price performance measure was designed to incentivise NG to minimise residual balancing interventions and, where residual balancing actions are necessary, to trade as close as it can to market prices.
- 3.3. The scheme thus sets a target daily spread between the highest and lowest prices traded by NG when undertaking eligible balancing actions, expressed as a percentage of the System Average Price (SAP). NG is rewarded (maximum £5,000 per day) if no balancing action is taken or if the spread is less than a reference level of 10% SAP and suffers losses (maximum £30,000 per day) when the spread is beyond target.
- 3.4. The design intent for the linepack performance measure was that, as far as possible, system imbalances should be addressed on the day (at the prevailing market prices) rather than being carried forward to be addressed on a subsequent day at different prices. This was intended to ensure that the costs of resolving imbalances were targeted at those causing the imbalance (NG describes this as the “polluter pays” principle).
- 3.5. The linepack performance measure thus incentivises NG to minimise linepack changes over the day, so NG gains maximum reward when the closing linepack level is the same as opening linepack. NG is rewarded if the linepack change is less than the 2.4 mcm reference level (or “tolerance”) and suffers losses if greater. The maximum gains or losses are the same as for the price performance measure.

### **Industry views on existing scheme**

- 3.6. As far as we are aware, there are no widespread industry concerns regarding the structure of the price performance measure. No major issues were raised in connection with this during the last round of SO incentives consultation and the consensus appears to be that this part of the incentive is structurally sound, although it might be appropriate to review the parameters.
- 3.7. By contrast, there appear to be divergent views on the linepack measure. Concerns have been expressed that NG is encouraged to take “unnecessary” balancing actions, imposing costs on shippers that could have been avoided if linepack changes were simply carried forward to the next day. There are also concerns that NG sometimes takes balancing actions late in the gas day when the market is less liquid, setting imbalance charges with a large deviation from SAP, which perhaps could otherwise be avoided. This is used as an argument to perhaps remove the linepack measure altogether.
- 3.8. On the other hand, other industry participants appear to feel it appropriate that NG does not have full discretion to decide the extent to which system imbalances are carried forward from one day to another and view the linepack measure as a suitable constraint. It is argued that the measure improves balancing action predictability and prevents balancing costs from being shifted from day to day (in line with the ‘Polluter Pays principle’)

### **Price performance measure**

- 3.9. It appears to be generally accepted that, overall, the residual balancing incentive should encourage minimisation of residual balancing actions, and ensure as far as possible that any necessary transactions are close to market prices. This is a corollary of the general principle that shippers should, as far as possible be responsible for their individual daily balances.
- 3.10. We believe that the price performance measure is a structurally sound element of the scheme that contributes to these objectives and should therefore be retained.
- 3.11. The parameters associated with this measure, and which determine gains or losses, should be reviewed when the approach to be adopted for other aspects of the incentive scheme (in particular relating to linepack) becomes clearer.
- 3.12. Based on performance to date, we think it is likely that it would be appropriate to reduce the level of payout for taking no action, once the approach to be adopted on other aspects of the regime is clearer.

### **Should the linepack performance measure be removed?**

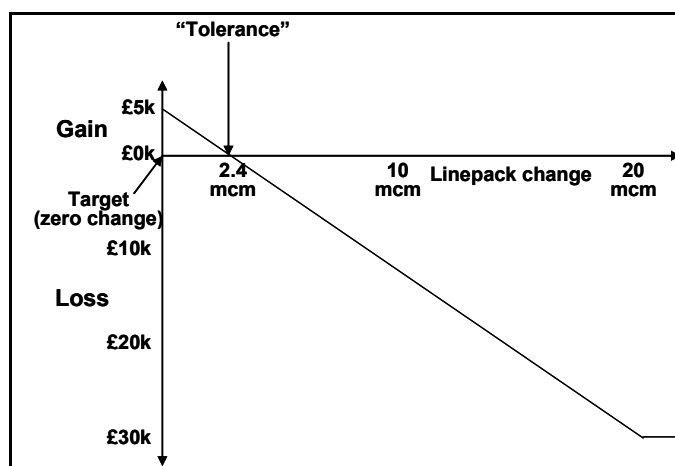
- 3.13. The key high level issue raised by NG is whether the objective of avoiding the transfer of imbalances from day to day should be retained – in other words, does some form of linepack performance measure within the scheme remain appropriate? The alternative described by NG would involve it trading “against the physical requirements of the system, thereby potentially resolving imbalances on different days”.
- 3.14. On the face of it, and in the context of a single day, the effect of the linepack element of the scheme could be seen as running counter to the objective of minimising residual balancing actions, because it can reward NG for taking balancing actions which move linepack closer to the opening linepack position, irrespective of whether the system could cope without those balancing actions. It is logical therefore to consider what impacts removal of the linepack performance measure might have.
- 3.15. The alternative as described by NG would provide discretion for balancing actions to be taken solely on the basis of “physical requirements”, but presumably with a view to maximising gains under the price performance measure. Without further definition of “physical requirements” this would in our view provide NG with very wide latitude to take balancing actions, with less transparency as to cause, and therefore less predictability.
- 3.16. A key motivation of those with concerns regarding the linepack measure appears to be that linepack flexibility within the system should be used to minimise the residual balancing costs imposed on shippers, by allowing the carry forward of imbalances between days so far as the system can physically permit.
- 3.17. The objective of minimising costs is clearly sound, but we believe an accurate quantification of balancing costs becomes almost impossible

to make when large system imbalances are carried forward from day to day, due to pricing differentials between days.

- 3.18. We recognise concerns that the linepack measure may encourage NG to take balancing actions late in the day when the market may be less liquid. Inspection of balancing data shown in Appendix B indicates that there are on occasion late balancing actions which cause a “spike” in imbalance prices.
- 3.19. Adjusting the scheme parameters to encourage earlier residual balancing actions, when the market may be more liquid, might ameliorate the price impact, but would likely lead to an overall increase in residual balancing activity because there is less certainty on balancing requirements earlier in the day. We believe that this issue might be better addressed by adjusting the level of the tolerances and payout structure, rather than by removing the linepack measure altogether.
- 3.20. We also think it is possible that there are other issues with the way in which the linepack incentive operates which might be causing late balancing actions, for example, an unstated operational requirement for a linepack change. This is discussed further below.
- 3.21. Overall, we believe complete removal of the linepack performance measure would afford NG wide discretion in terms of the carry through of imbalances, potentially leading to reduced predictability of residual balancing actions and an increase in untargeted (or inappropriately targeted) costs.

**Possible refinements to the linepack incentive structure**

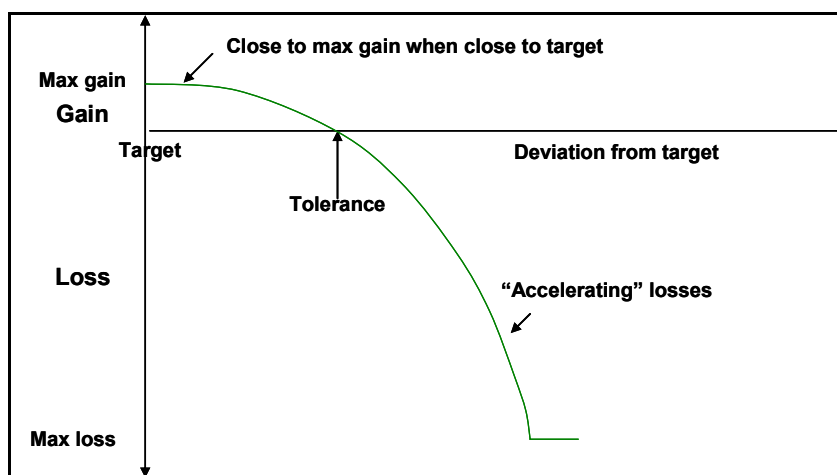
- 3.22. The existing linepack incentive has a simple linear structure whereby if closing linepack is within 2.4 mcm of opening linepack then NG gains, but if beyond, suffers losses:



*Existing Linepack Incentive Structure*

- 3.23. The 2.4 mcm reference measure under the current scheme in effect constitutes a tolerance, implying the carry forward of imbalances less than this is acceptable, as it is rewarded and vice versa.
- 3.24. Increasing /widening the tolerance level could be expected to reduce residual balancing activity but at the expense of increased imbalance carry-forward.

- 3.25. If it was considered desirable to provide NG with a little more scope to enable imbalances to be carried forward when the physical system permits (thereby perhaps avoiding late balancing actions) then tolerance widening could be considered in combination with a structure designed to discourage carry forward of larger imbalances.
- 3.26. This could be achieved by changing the linear loss v performance relationship so that losses “accelerate” as the imbalance becomes larger, as shown below:



- 3.27. As NG has pointed out, under the existing scheme the linear gain between the 2.4 mcm “tolerance” and hitting the target exactly does not reflect operational reality, in that it is not possible to fine tune balancing decisions to this extent. It may be more appropriate for the maximum gain to apply over a range close to target. This can be approximated by a smoothed curve that is relatively flat at lower deviation levels, as shown in the diagram.
- 3.28. We think it would also be appropriate to reduce maximum gain (the level of payout for being within tolerance) from the current level in conjunction with this type of change, and possibly that this would be appropriate in any event.
- 3.29. Varying tolerance levels could also be considered. For example, wider tolerances might be more acceptable in the summer, and narrower in the winter. Allowing tolerance levels to be varied might enable a better reflection of the actual (variable) physical capability of the system to carry forward imbalances as opposed to allowing NG to trade otherwise unencumbered ‘against the physical requirements of the system’.
- 3.30. If this was considered desirable, we think a simple mechanistic system to indicate pre-determined narrow, medium or wide tolerance levels applying for the day/period would be preferable (to an infinite range of allowed tolerance settings)
- 3.31. We also think that it would be very important that tolerance levels should be set in advance of the day in order that Shippers can assess the likelihood of balancing action being required.
- 3.32. Generally, we believe it is important to avoid step changes in the incentive structure as “cliff edges” tend to result in erratic behaviour.

- 3.33. Inspection of the data shows that the average day to day linepack change is around 2.5mcm, very close to the existing tolerance level. This might suggest that the existing tolerance is set at an appropriate level.
- 3.34. However we have described here some modest changes to the structure of the incentive which might better encourage “desirable” behaviours. Further analysis of performance under the existing scheme may assist in defining appropriate tolerance levels and the detailed nature of the reward v performance arrangements.
- 3.35. There is also an interaction between residual balancing activity and default SMP prices which apply when no balancing action is taken, which might also be considered in this context.

**Are there other problems with the existing linepack performance measure?**

- 3.36. The existing linepack incentive arrangements drive a return to opening linepack which, as NG points out, ignores the operational requirements for different linepack levels at different levels of demand.
- 3.37. If, for example, opening linepack was say 10 mcm below the optimum level given the demand forecast for the day, then NG is faced with a dilemma. It can ignore the linepack incentive (and accept that losses will be made under this part of the scheme) and take residual balancing actions as necessary (potentially incurring more losses) to return to optimum linepack levels. Alternatively it could attempt to make incentive gains from the linepack measure by keeping linepack at the opening level, accepting that this will perpetuate sub-optimal linepack levels, during the current day and at the start of the following day.
- 3.38. Whilst the current scheme was intended to minimise carryover of gas from day to day, it does not seem appropriate that NG should be incentivised to operate at conditions which do not reflect sound operational practice. Ofgem has previously pointed out<sup>3</sup> that there appears not to have been any significant improvement in NG’s linepack performance and it is possible that the “zero linepack change” aspect is a contributory factor – NG presumably simply ignores the linepack measure when there are overriding operational concerns about linepack levels.
- 3.39. We also believe that this construction could be contributing to reduced transparency and predictability in terms of system status and likelihood of balancing actions, as well as possibly contributing to late balancing actions. Whilst the closing linepack level required to make maximum gain under the incentive is transparent, only NG will be aware of the extent to which operational circumstances may dictate a need to deviate from this level - in other words NG’s internal (unpublished) closing linepack target may be very different from that implied by the incentive.

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<sup>3</sup> Review of Electricity and Gas System Operator Role, Functions and Incentives: Initial Thoughts, Ofgem, August 2007, para 3.29

### Would an 'absolute' linepack target help?

- 3.40. We believe that setting the incentive scheme closing linepack target for each day at an absolute level to reflect, as far as possible, operational requirements for the day (rather than defining the closing linepack target as a return to opening linepack level) may prove beneficial as it would tend to align NG's incentive and operational goals.
- 3.41. It could also provide market participants with better information on system status; the projected closing linepack compared to incentive target would likely better reflect system status (short or long) than the existing arrangements where the incentive target position may be operationally irrelevant.
- 3.42. It appears from data provided by NG that linepack levels are reasonably well correlated with demand and this relationship would appear to form a reasonable starting point for incentive target setting for a particular day:

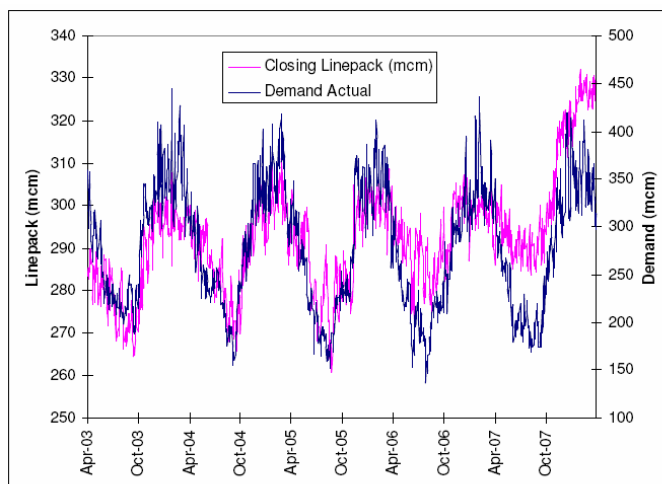


Figure 1 – Relationship between Demand and Closing Linepack

- 3.43. We think the linepack target could be set at the beginning of each day at an absolute level, based on the forecast demand for that day
- 3.44. However, the linepack level derived purely from the demand relationship may occasionally be inappropriate on particular days for sound operational reasons. These include, for example, circumstances where maintenance or pigging operations are ongoing, or where there are compressor reliability issues which affect the required linepack level.
- 3.45. There are also circumstances where there is a need for a net increase in overall inventory when pipelines are commissioned and pressured up. We understand that this is the reason for the increased linepack level in winter 2007/2008 compared to that for winter 2006/2007.
- 3.46. The extent to which NG might have discretion to amend a demand related incentive target linepack level to account for operational circumstances on particular days would require careful consideration. In our view it would be important to ensure that the incentive target was set such that it did not differ appreciably from operational requirements, thus aligning operational and incentive goals.

- 3.47. It would be important that the absolute closing target should be published at the start of each day.

**Would a different accounting treatment for NTS linepack changes help?**

- 3.48. We noted in section 2 that operationally required NTS linepack changes are not assigned to an NG user account. We concluded that potentially, these changes could give rise to (or exacerbate the need for) residual balancing actions, but under the existing arrangements the costs are not targeted via imbalance charges.
- 3.49. Against a backdrop of a “minimal intervention” philosophy for residual balancing, continuation of the NTS linepack treatment might, depending on the quantities and value involved, be regarded as undesirable.
- 3.50. The linepack data provided by NG indicates winter-summer seasonal NTS linepack variations of around 30 mcm or more. At a winter-summer spread of 20p a 30mcm change would be valued at just over £2m, although the costs of an upward change for winter would be offset by the value of downward changes for the following summer.
- 3.51. There has also been a significant increase in absolute linepack levels since the 2006/2007 winter due to commissioning of new pipelines, and NG has previously indicated that this amounts to more than 50 mcm. At today’s summer prices 50 mcm would be valued at around £15m.
- 3.52. In view of the quantities involved, there appears to be a reasonable case for a more rigorous accounting treatment for NTS linepack changes, and this could be achieved by assigning the quantities to an NG user account.
- 3.53. The incentive target setting process described above could be used to define the quantities assigned to the NG user account. The operationally required linepack change for a day is simply the difference between the incentive target for the day and that for the previous day.
- 3.54. The linepack change quantity assigned to the NG user account would be an output in the case for an increase in required linepack, or an input in the case of a decrease in required linepack.
- 3.55. There may be a need for a correction mechanism (similar to that applying to NTS shrinkage quantities) to reflect the fact that the actual linepack changes attributable to operational requirements (as established after the day) may differ from the target set ahead of the day.

**Nature of the NG user linepack account**

- 3.56. One possibility might be that this linepack account could be permitted to run an imbalance position between days in the anticipation that over a period, the inventory changes would net off against each other. Any residual amount at the end of the year could be cashed out at SAP for example (provided of course that specific provision for new pipelines had also been accounted for).
- 3.57. We think though, that there may be merit in considering allowing NG to purchase volumes of gas to provide specifically for linepack stock

changes, not just to rectify the accounting imbalance position, but also to assist with the daily physical position.

- 3.58. The shrinkage provider account, or a similar separate linepack account, could prove a suitable vehicle for this purpose. In operating this account NG would deal with the daily linepack change requirement by making acquiring or disposing NBP trades accordingly.
- 3.59. NG would be subject to imbalance charges in the balancing regime for its provision of operationally required linepack changes itself, rather than relying on residual balancing to accommodate linepack needs, through balancing interventions if necessary.
- 3.60. This approach could be expected to create a clearer distinction between the residual balancing role and the provision of gas for operational linepack purposes, providing more transparency on the cause of imbalances and better targeting the associated costs.
- 3.61. The fact that NG sources or disposes of gas to meet linepack change requirements separately from its residual balancing role could be expected to reduce the incidence of residual balancing actions compared with today's arrangements, in line with one of the key objectives of the incentive scheme.

#### **What about GDN linepack changes?**

- 3.62. We also noted in section 2 that GDN linepack changes are not assigned to GDN user accounts and that there is therefore the potential for increased residual balancing activity by NG to accommodate required GDN linepack changes, but no targeting of the associated costs.
- 3.63. If the scale and value associated with these changes were sufficient to warrant it, the issue could be addressed by assigning GDN linepack changes to GDN user accounts, in a similar manner to that suggested for NTS linepack changes.
- 3.64. If it was concluded that linepack changes should be specifically procured for, this would have the effect of encouraging GDNs to source gas for linepack changes directly rather than relying on NG as residual balancer to accommodate the changes, potentially reducing the incidence of residual balancing actions compared with today's arrangements
- 3.65. An analysis of the scale and value associated with GDN linepack changes is required to assess whether this was appropriate.

#### **Residual balancing scheme duration**

- 3.66. NG has sought views on scheme duration, suggesting that a three year period may be appropriate. Given the short term daily nature of the residual balancing activity we see little benefit in locking in the structure and parameters for a number of years. We therefore believe that provision should be made for review and potential amendment on an annual basis.

#### **Information accuracy**

- 3.67. NG has sought views on whether the accuracy of its demand forecasts should form part of the residual balancing incentive. This is

an important issue which is already covered under an existing separate scheme. We see no reason to combine it with the residual balancing scheme as it could detract from the major objectives.

- 3.68. NG has also suggested that the scheme might also reflect the quality of information available to it when making balancing decisions. Views are sought on how accurate shipper nominations might be incentivised, or whether the gains/ losses under the scheme could be adjusted based on the quality of information provided by market participants.
- 3.69. It is our understanding that balancing decisions are in the main based on supply and demand information provided by connected operators, rather than shipper nominations, so it is not clear what value would result from further incentivising shipper nominations beyond the existing scheduling charge arrangements. In addition, an incentivised nomination scheme introduced previously did not prove successful and we see little value in resurrecting this concept.
- 3.70. It is not clear what benefits might accrue by adjustment of the incentive scheme gain/ loss arrangements to reflect information quality. A more detailed explanation of the value NG attaches to more accurate information, and the consequential impact on residual balancing performance, would enable this to be considered further.
- 3.71. Overall, we do not think it is appropriate to address demand forecast and nomination information quality within the residual balancing incentive scheme. Addressing this issue within the scheme could add complexity and detract from the important issues associated with the price performance and linepack elements.

#### 4. Energy transfer service

*NG has outlined the concept of an inter-day imbalance transfer service and is seeking views as to whether this is something which should be considered for further development. At face value, this is a commercial product which any party could offer to the market, and which could in theory help market efficiency.*

*The product concept is still only embryonic and loosely articulated, which makes it difficult to be definitive about the risks and other implications.*

*However, in this section we have attempted to draw out some important interactions and possible consequences of NG offering such a product, summarised below:*

- Our initial review suggests that the key issue appears to be the potential for an energy transfer product to adversely interact with NG's residual balancing role. Any future development of this concept would need to squarely address this important concern.*
- We believe that a daily product is likely to be 'self-defeating', in that the times when it is most likely to have value to Shippers is the time when NG is least likely to be in a position to release it.*
- It has the capability to add significant risk and volatility into the operation of the market.*
- We do not think this need be an issue for the incentives from April 2009. It can be considered separately and on a different timescale, although consideration of associated incentive arrangements and balancing rules would definitely have to be an intrinsic part of any development of this product.*

#### **Service Description**

- 4.1 NG has taken the opportunity of this consultation to float the idea of a possible inter-day energy transfer service and is seeking views on whether this is something of potential value to shippers that should be considered further. It appears that the ideas are deliberately only embryonic and that this is not firm proposal at this stage, and we offer our initial reaction in this light.
- 4.2 The energy transfer concept might be seen in part as a response to shippers concerns about late balancing actions and queries over whether or not the linepack incentive target should be retained, given the physical capability which is sometimes available to allow an imbalance to be carried over into the next day. However, at Ofgem's prompting, NG has explored various approaches to offering 'linepack services' in the past, and this appears to follow a similar theme, of making commercial use of the 'flexibility' provided by linepack in the system.
- 4.3 As currently outlined, the service would allow shippers 'to deliver an agreed quantity of gas (+ve or -ve) onto the system on one gas day and for that quantity to be transferred to its overall contractual/ supply position against a different gas day without incurring an imbalance charge on that quantity on either day'.

- 4.4 The service would be based on 'firm' nominations (e.g. trade noms to the NBP) which would be deemed to be delivered, but a Shipper's remaining allocated imbalance position would be cashed out, as it is at present.
- 4.5 NG suggests a weekday transfer service and a weekend energy transfer service, with a view to facilitating Shipper's ability to arbitrage between prices on consecutive days or between weekend and weekday prices.
- 4.6 NG would still need to take balancing actions to move the position of linepack as it does at present. It does not regard the product as a balancing tool.
- 4.7 NG says it would 'release' the product only when it was confident that it could make it available without 'impact on the level of operational risk and the operation of the market'. NG has suggested that release could be via auction or via bids made to a third party market operator.

#### **What is the energy transfer product?**

- 4.8 We interpret NG's product description in its simplest form as an agreement with a party to provide a certain amount of gas on one day and to receive the same amount back on another (or vice versa) with the value of the product driven by the price spread for the days in question. It appears to be a product that could be offered by any other player in the gas market, and at face value could contribute to market efficiency.
- 4.9 At face value, this appears to be a product concept similar in nature to a short term fixed-duration storage service, underwritten by available linepack capability, which actually could be offered by any party to the market.
- 4.10 It could also be viewed as a mechanism for trading projected positions between Shippers on consecutive days.
- 4.11 Given that the ability to provide the product is underpinned by linepack availability within the system and, as we have seen in previous sections, this is integral to the daily and residual balancing regimes that drive the market, it is important to consider the wider implications of possible product introduction.
- 4.12 We also need to consider whether an NG product offering of this type would sit comfortably with the fact that NG is not an independent player in the gas market, and only participates for specific purposes under restricted terms.

#### **Interaction with residual balancing**

- 4.13 NG indicates that the product would only be made available when "operational circumstances are favourable". We have some difficulty in understanding how this might be defined in practice.
- 4.14 One approach might be to offer the product only to the extent that delivery of the new obligations associated with it would not give rise to residual balancing actions. However, NG has not addressed issues concerning interactions with residual balancing and this gives us some cause for concern.

- 4.15 There is the potential for residual balancing actions to be taken on a day to “create” the capability to offer the product. For example, system buy actions can increase linepack levels allowing NG to offer a product enabling shippers to “under-deliver today” and “over-deliver” tomorrow. Likewise system sell actions could be undertaken on the following day to accommodate the overdelivery.
- 4.16 We see the potential for interactions between the product and residual balancing as very problematic. We do not see any way in which NG could offer the product and at the same time provide assurances that residual balancing activity would remain unaffected, so we don’t understand NG’s statement that this product would not be a balancing tool. Therefore there is potential for the product to influence OCM and imbalance prices, which may not be appropriate.
- 4.17 How the product would be priced, and what, if any, financial benefits should accrue to NG are therefore central issues in determining the risks/benefits associated with such a product. It is difficult to see why NG would/should offer such a product if it does not stand to benefit either through sales income or reward under an incentive scheme. However, if NG does stand to benefit, then it has the potential to encourage behaviour by NG which may conflict with its responsibilities for residual balancing.
- 4.18 For example, assuming NG is incentivised to sell the product, there is an interaction with the residual balancing incentive that might actually encourage NG to use residual balancing to create the product capability, if the trade-off of benefits so dictates. For the reasons given above this would seem inappropriate
- 4.19 To attempt to resolve this conflict, if it is possible to do so, the objectives of NG offering the product in terms of its benefits to the market would need to be clearly understood and articulated, and the interests of NG and the efficient operation of the market would need to be aligned through its remuneration scheme.

**Product Value**

- 4.20 We think it could be difficult for NG to offer such a product to market in such a way that it would have value.
- 4.21 NG has itself highlighted the tension between release time and quantity of product available. A later release time might provide certainty in relation to the near-real time position, which NG says would enable it to release more product, but it will not really have any greater or lesser uncertainty in relation to the likely system conditions on the subsequent days or weekend when it releases the product.
- 4.22 In fact, for a weekend product particularly, NG is likely to have to second guess the impact of the product on the market, including the direction it would drive the price, in order to assess the overall risk and value, throughout the transaction period, of releasing it.
- 4.23 The stated intention appears to be to allow Shippers to arbitrage between prices on different days and between weekdays vs weekends.

- 4.24 Much depends on detailed product and rule definitions but in principle, in order for this to be of value to Shippers, there would need to be a price differential available between the days/periods when this was offered.
- 4.25 Generally, prompt prices become differential when the system is set to be either long or short. This will tend to occur when Shippers are likely to be significantly out of balance. This being the case, in the short term it would be expected that NG would be taking balancing action to try and rectify the situation and the linepack situation would be likely to be 'tight'.
- 4.26 It is therefore possible that NG is least likely to view the daily product as being 'available' at precisely the times when it would be of most value to Shippers, making the product 'self-defeating'.

**Could there be an impact on system status?**

- 4.27 In the event that NG perceived that there was sufficient value available in offering the product which would offset any exposure to incentive penalty costs under its incentives, we think it is possible that releasing the transfer product could facilitate Shippers taking an even bigger physical imbalance position, which could worsen the system situation and increase the likelihood of balancing action as a result. This could increase price volatility significantly.
- 4.28 In general, the potential for rapidly worsening a physical problem on the system should also be a significant concern in its own right.
- 4.29 This would appear to reinforce concerns regarding the interaction with residual balancing as exacerbation of system short or long positions would increase the likelihood of residual balancing actions.

**An alternative product for within day projected shipper imbalance trading?**

- 4.30 NG could identify Shippers with opposing projected imbalance issues on a day, and offer a product with some confidence that both parties would take it up and the net position would therefore not affect the system physically. We would point out that this type of service is not dependent on the availability of linepack, nor on a between days transaction. This might be likened to a facilitated swap on the day.
- 4.31 We are aware of similar product offerings in the US where imbalances are traded almost as a commodity in their own right, but would highlight that this is based on vast quantities of linepack available in the US pipeline systems and on firm nominations regimes which do not require daily balancing.
- 4.32 This would require NG to use the nominations information it has available, to investigate Shippers imbalance positions and potentially match. It would need to be considered whether this would be appropriate and whether it was possible to make the process transparent.

**Other Issues**

- 4.33 Sale of the product could interact with NG's other service obligations. For example low linepack levels maintained to accommodate product related overdeliveries might restrict the availability of exit flexibility.

- 4.34 NG could use the product to 'unpack' the system, potentially helping to relieve capacity constraints.
- 4.35 Clearly this capability would need consideration in relation to the various specific incentives as well as the balance between incentive schemes.
- 4.36 We wonder if there may be FSA implications associated with NG offering this product, because of its role as residual balancer.
- 4.37 NG identifies the importance of market information and we would echo this issue as a priority for early consideration. However, without better product definition at this stage it is difficult to offer meaningful views. We do believe that price transparency for the product is essential to its value to Shippers.
- 4.38 We think NG's suggestion that PCLP should be published with additional information about the quantity of product sold is sensible, but this would obviously need to be confirmed once the product (and the operation of the balancing regime and incentives) was better defined.

#### **Conclusion**

- 4.39 We do not think this need be an issue for the incentives from April 2009. It can be considered separately and on a different timescale, although consideration of associated incentive arrangements and balancing rules would definitely have to be an intrinsic part of any development of this product.
- 4.40 Our initial review suggests that the key issue appears to be the potential for an energy transfer product to adversely interact with NG's residual balancing role. Any future development of this concept would need to squarely address this important concern.

## 5. NTS shrinkage overview

*The general purpose of incentive schemes is to encourage NG to make efficient trade-offs between potentially conflicting operational considerations, for the overall benefit of the Industry. The schemes need to be considered in the round, and the parameters of the various schemes should be set with their relationship to each other in mind, and so as to articulate priorities and encourage preferred NG behaviour.*

*NG suggests that it has other operational considerations that could be better optimised without a fuel minimisation objective under the Shrinkage Incentive. We believe that the current wider incentive framework provides NG appropriate opportunities to trade-off between costs associated with, for example, capacity buy-back costs, and shrinkage incentive payments.*

*NG has not indicated any specific areas which could be improved upon or quantified any benefits which might be associated with removing the fuel minimisation objective. Were such specific areas to be identified and justified then they could potentially be reflected in adjusted incentive arrangements*

*We believe that fuel minimisation is an important objective in the incentive scheme, which works in conjunction with the price element to create an overall objective of cost minimisation, which is an important aspect for Shippers*

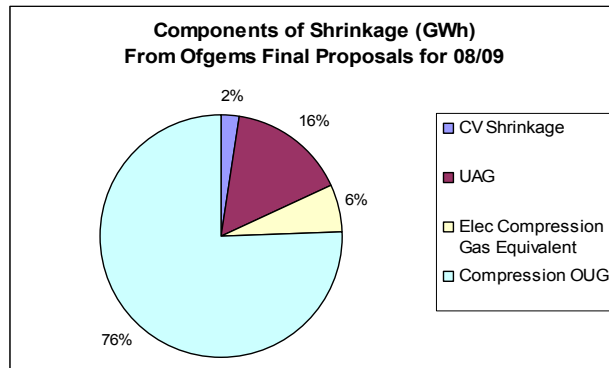
*Without a fuel minimisation objective, NG would be unconstrained in its use of fuel, and might operate inefficiently as a result. We do not think Shippers would wish to fund such an arrangement.*

### **Introduction – The current shrinkage incentive**

- 5.1 In simple terms, NG's overall incentive target is to minimise the cost of Shrinkage. The target is defined as target volume x target price, (known as the Gas Cost Reference Price<sup>4</sup>, or GCRP) which means that NG can beat the incentive by outperforming on the volume target (e.g. using less compression energy), or by outperforming the price target (through managing its procurement efficiently), or both.<sup>5</sup>
- 5.2 In April 2008, Ofgem set a quarterly incentive structure such that price and volume targets are now set for each quarter. Ofgem stated that this was to prevent the risk of NG hitting the cap/collar too early in the year and removing the incentive effect.
- 5.3 NG forecast the total cost of shrinkage to be £135m for this year (excluding costs of TOM Compression at St Fergus which are recovered through a dedicated charge to St Fergus Shippers but which are procured alongside remaining Shrinkage energy).
- 5.4 The relative proportions of the volumes of gas/energy are illustrated below, for the incentive scheme set for April 2008/2009.

<sup>4</sup> There is also an ECRP for the electrical energy component, see section 8 below

<sup>5</sup> NG share in the benefits of any outperformance, with the amount of their incentive income defined as a given percentage share (currently 25%) of the upside, up to a capped level (£4m). If it does not meet the target, it pays an incentive payment which again, is a percentage share (20%) in the 'loss' down to a 'collared' level (-£3m).



5.5 For the last two years, the incentive structure has been banded to relate the target volume to the flows through St Fergus, since these are understood to be a significant driver of the amount of compressor fuel required.

St Fergus Flows mcm/d	CV Shrinkage GWH	UAG GWH	Elec. Compression Gas Equivalent GWH	Gas Compression OUG GWH	Total Allowance GWH
x<85	150	975	276	3281	4682
85<x<90	150	975	336	4068	5529
90<x<95	150	975	366	4385	5876
95<x<100	150	975	390	4700	6215
100<x<105	150	975	414	5017	6556
x>105	150	975	465	5710	7300

Figures deduced from Ofgem's Final Proposals for Incentives from April 2008

5.6 In setting the Incentives from April 2008, Ofgem allowed NG to remove particular volumes of CV Shrinkage over which NG has no control, and is undertaking a programme of engagement with DBERR on the CV Capping Legislation.

5.7 NG has consistently outperformed this incentive by a significant margin, as NG's figure 7 shows:-

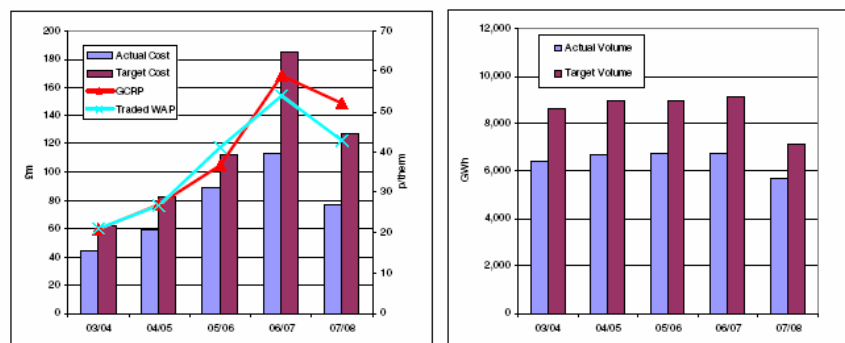


Figure 7 – Historic performance under the Shrinkage incentive

### **General purpose of incentive schemes**

- 5.8 The general purpose of incentive schemes is to encourage NG to make efficient trade-offs between potentially conflicting operational considerations, for the overall benefit of the Industry.
- 5.9 The parameters of the various schemes, i.e. their objectives and the benefits which NG can realise, are set in relation to each other. The incentives are thus designed to articulate a view of what the operational priorities should be and to encourage preferred NG behaviour.
- 5.10 This can mean that incentive objectives can appear to conflict, when in fact it is intended that a tension is struck between different objectives of different schemes. The linepack measure and the price performance measure in residual balancing are good examples of this.
- 5.11 This is one reason why it is very important that incentive schemes are considered together as a package, and not just in isolation.
- 5.12 Incentive schemes may also be particularly valuable where it is difficult to isolate and quantify costs associated with any one course of operational action. In a sense, incentive schemes can act as a proxy for more accurate cost targeting (that might impose the full cost of service on the requesting shipper), by instead providing NG with an over-arching incentive to keep costs down to set against the benefit it receives for providing extra service.
- 5.13 Where costs can be isolated and quantified, then there may be a case for excluding those costs from the NG incentive scheme altogether, and leaving it to shippers to decide whether the extra cost that they will pay justifies the incremental service, provided that the rewards for NG managing or incurring those specific costs are then not at odds with the overall intentions of the incentive scheme framework.

### **Fuel minimisation as an objective of the incentive**

- 5.14 In its consultation, NG asks if fuel minimisation should be an objective of the incentive (Q18). This is a reasonable question, since if NG believes that there would be ways in which it could better optimise the system to provide better 'service' if it were not constrained on fuel use, then this would be worth exploring.
- 5.15 We would point out that the structure of the incentive does not explicitly set fuel minimisation as the sole objective, rather the objective is articulated as cost minimisation as described above.
- 5.16 Given the price tag associated with Shrinkage provision (probably something approaching £200m in total this year)<sup>6</sup>, cost minimisation is highly relevant and appropriate for Shippers as an overall incentive objective, and fuel minimisation is obviously an important element of this.

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<sup>6</sup> Including St Fergus TOM compression volumes, which are paid for by St Fergus Shippers, but still have to be procured and for which there is still a price incentive for efficient procurement.

- 5.17 We concur that in general NG's degree of control over the volume of fuel used is limited since it is highly dependent on the locations of supply and demand, and this is the purpose behind banding of the target volume linked to flows through St Fergus.
- 5.18 This is not to say however, that NG has no control over compressor fuel usage, and that it would be appropriate to simply turn the incentive objective into one of efficient procurement.
- 5.19 Without a fuel minimisation objective, NG would be unconstrained in its use of fuel, and might operate inefficiently as a result. We do not think Shippers would wish to fund such an arrangement.
- 5.20 The question then, is whether or not fuel minimisation as an objective is actually causing a sub-optimal 'service' which might be improved upon if the incentive arrangements were different.
- 5.21 This concerns whether or not the operational trade-offs which NG can make are appropriate, as discussed further below.
- 5.22 NG highlights (para. 92) four areas in which its use of compressors interacts with other operational drivers it manages:
- Operational Risk (e.g. ensuring the system can cope if there is a compressor trip)
  - Entry Capacity (NG can maximise the amount of entry capacity, and help avoid or limit buybacks by running compressors)
  - CV Shrinkage (Unbilled Energy – compressors can be run to help minimise CV Shrinkage in parts of the network)
  - Guaranteed Pressures – NG has obligations to provide minimum pressures, and suggests that without a fuel minimisation target, it would be able to extend this facility
- 5.23 There are in fact more areas of interaction with compression in the regime, including linepack availability and the provision of exit (and entry) flexibility.
- 5.24 NG has other incentive schemes relating to all the areas it identified above and the relative values attached to the various schemes are set to reflect an Industry/Ofgem view of preferred NG priorities:
- The Shrinkage incentive currently provides a maximum payout to NG of £4m, and a maximum loss of £3m over a year.
  - The entry capacity operational buyback regime exposes NG to a potential annual cost of £18m.
  - CV Shrinkage volumes within the incentive are just some 2% of the overall total Shrinkage volumes, and so will represent a much smaller cost saving<sup>7</sup>, although spikes can be generated in some system conditions.
- 5.25 Given the relative values to NG, it is likely that NG would choose to run compressors to limit its exposure to capacity buybacks, and it is only likely to attempt to minimise CV Shrinkage using compression on a few occasions when conditions on the system permit and/or demand it.

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<sup>7</sup> In answer to a question from TPA Solutions, NG indicated that it had recently saved £30k of CV Shrinkage exposure by using £14k of compressor fuel.

- 5.26 Arguably, these are exactly the efficient outcomes that the incentive regime is intended to generate, and this is already occurring within the existing incentive parameters and structure.
- 5.27 NG has not specified what additional service it could make available if there were no aspect of fuel minimisation, nor has it provided any evidence of service deterioration arising as a result of the current scheme.
- 5.28 We therefore conclude that including a component of fuel minimisation in the incentive scheme is an effective and essential means of encouraging NG to manage these operational trade-offs appropriately.
- 5.29 If there are clearly identified aspects of service provision not already covered by incentive schemes, where the fuel minimisation objective is impeding delivery of services that would be of value to shippers, then there might be a case for refining the fuel minimisation arrangements to accommodate these circumstances.
- 5.30 This could involve, for example, a pass through of fuel volumes on a particular day where NG commits to provide a service that it would be unable to offer without additional fuel usage.
- 5.31 An example of such a service which might be welcome to Shippers would be incremental discretionary capacity. If NG believes it could make more discretionary capacity available through using additional compression, and can identify the additional compression costs associated with its provision, then these costs could be appropriately targeted at those seeking to use the service. In this scenario, Shippers would use their own valuation of benefit to determine whether the incremental costs are justified, and proper cost targetting would ensure that their decision is not cross-subsidised by others.
- 5.32 At present, discretionary capacity may be provided, but any additional costs of compression are not targeted on the shippers buying that capacity – hence NG must use its own discretion (guided by its various incentives and obligations) to decide whether or not extra capacity should be provided at the expense of increased compression.
- 5.33 Because there is a fuel minimisation objective in place, we believe it is likely that NG would only offer discretionary capacity to the extent that it did not cause a specific quantifiable increase in compression costs. It would be useful to understand if this is the case, and whether there are other ways in which the current parameters of the compression incentive scheme interact with the rewards obtained by NG for making extra capacity available, although we recognise that extra compressor fuel may not be the only consideration in this decision.

## 6. Compressor fuel use

*We believe that a development of the current 'target drivers' approach is in general an appropriate means of adjusting the target for outturn events, with the intention of limiting the scope for windfall gains or losses on volume under the Shrinkage incentive and increasing the focus of the incentive on the volumes which are not directly influenced by specific factors.*

*Similarly, developing the 'target drivers' for forecasting the central compressor fuel target within bands is appropriate at this time, in conjunction with input from network analysis and some additional statistical analysis.*

*However, we have concerns that a significant amount of further network analysis information and statistical analysis than appears to have been undertaken to date is required to ensure that this approach is robust.*

*With changing supply patterns, a significant consideration for future forecasting is likely to be the interaction with demand on the system, but it is probably too early to say how this should be incorporated into the forecasting process. Analysing the impact of Bacton IUK interconnector demand on compressor fuel might offer a starting point.*

*We believe that the TBE process is well established and is likely to represent the best supply and demand data available. Therefore we agree that this supply demand forecast should be used as the basis for compressor fuel forecasting.*

### **Using target drivers for incentive target setting**

- 6.1 NG's 'target driver' approach is a means of attempting to identify the most significant influences on compressor fuel, enabling banding or otherwise adjusting the target volume for outturn events.
- 6.2 To the extent that NG has limited control over its use of the majority of its compression requirement (i.e. that currently driven by flows at St Fergus), this is a reasonable approach although it has limitations where the future is significantly less likely to be like the past and so needs to be complemented by network analysis to model future scenarios. This is discussed further below.
- 6.3 Over the longer term, if increasing forecast accuracy can be obtained, and reliable target drivers can be developed to adjust the target accurately in relation to outturn events (currently defined as changes in supply levels through St Fergus) then this would effectively give NG a volume pass-through on the volumes of fuel use which can be identified as being driven by specific factors outside NG control (e.g. sourcing patterns). This would be appropriate, and would increase the focus on those elements of shrinkage which are within NG control, which is a desirable feature of the approach.

### **Compressor fuel forecasting**

- 6.4 The accurate forecasting of compressor fuel requirements is a key issue, since it drives the amount of fuel procured and hence a large proportion of the costs of Shrinkage, as well as being the basis for setting the incentive target volume.
- 6.5 It is important that the industry is confident that the volume forecasts feeding into the incentive are not inflated, as this would undermine the purpose of the incentive and transfer value to NG.

- 6.6 The method for compressor fuel forecasting is important currently for NG and Shippers, because of the potential for reduction in St Fergus flows, and significant uncertainty over the impact of new supplies arriving in the UK (e.g. Milford Haven).
- 6.7 This means that the established relationship between compressor fuel and flows at St Fergus may no longer be a suitable means of forecasting fuel requirements or of setting the forecast target bands.

### **Alternative forecasting approaches**

- 6.8 NG offers four alternative approaches to fuel forecasting for consideration:-
- Distance Travelled Model (suggested by Ofgem)
  - Historical Outturn
  - Network Simulation
  - Statistical Modelling

Below, we briefly assess the approaches suggested by NG and in light of this identify what we believe are the requirements for further analysis.

### **Distance travelled model**

- 6.9 Ofgem's suggested forecasting approach attempts to incorporate the impact of demand, as articulated by 'distance travelled' by gas in the network. This has not been fully defined, but would call for techniques and models which are not available at present, and could be overcomplicated, particularly in advance of any real experience of LNG importation supply patterns.
- 6.10 Whilst we could not say definitively that 'distance travelled' would be a sound approach, it follows that with increasing likelihood of south/north or west/east supply patterns emerging, there would be a greater imperative to include the impact of demand in the modelling of compressor fuel use, but it is probably too early to say how this should be incorporated into the forecasting process.
- 6.11 We think that exploring the impact of Bacton IUK Interconnector demand as a target driver might be a valuable exercise as a starting point.

### **Historical outturn**

- 6.12 In the past NG has used the Historical Outturn approach, simply forecasting compressor fuel based on historic use, which has been heavily influenced by St Fergus flows. Since it is clear that future levels of St Fergus flows will be less predictable, continuing to use an entirely retrospective approach is unlikely to provide an accurate basis for forecasting future compressor fuel use.

### **Network simulation**

- 6.13 Network simulation on its own as a forecast tool could be cumbersome, because of the time required, so would be unlikely to provide a suitable routine mechanism for forecasting.

### **Statistical modelling**

- 6.14 Statistical Modelling is a sophistication of the historical outturn approach which looks at the correlation between different factors to examine the extent to which they influence compressor fuel use. St Fergus flows have been well-correlated to date, but Easington supplies are showing increasing influence.
- 6.15 Difficulty arises when trying to use a statistical model populated with historical data to forecast future requirements which we know are likely to be influenced in new and different ways.
- 6.16 We believe that statistical modelling could form the basis for a sound forecasting method if used in combination with network analysis of new influences which would provide inputs into the model. The network analysis is needed to understand and articulate the relationship between, for example, new supplies at Milford Haven and compressor fuel use.
- 6.17 NG says it has taken this approach in including the impact of Milford Haven on its latest forecasts and target drivers analysis. The extent to which this issue has been tested appears to us to be very limited, and we are concerned that the range of potential outcomes may not be properly reflected in the modelling.

### **Requirement for additional network analysis information**

- 6.18 We believe that very helpful information about the relative sensitivity of compressor fuel use to changes in supply pattern could be gained by a limited amount of network modelling.
- 6.19 We also think that the impact of significant day-to-day variability in supply patterns on compression fuel usage should be modelled, given the scope for future LNG imports to caused varied supply patterns.
- 6.20 It is also possible that the impact of new supplies in the South combined with a reduction of flows at St Fergus could lead to a very significant drop in the compressor fuel requirement.
- 6.21 We have asked NG to publish any available information, or to undertake some limited modelling to explore the range of possible outcomes, but no such information has been published to date.
- 6.22 The information we have requested would help to provide confidence that the use of statistical modelling combined with network analysis to articulate future scenarios with which to populate the statistical model was appropriate.

### **Use of TBE base case**

- 6.23 NG has highlighted that any compressor fuel forecast will be highly dependent on the accuracy of the supply demand assumptions used. It currently uses the TBE base case at seasonal normal demand level, and uses this consultation to ask for views on whether or not this is appropriate.
- 6.24 We believe that the TBE process is well established and consulted upon and that this is likely to represent the best data available. Therefore we agree that this supply demand forecast should be used

as the basis for compressor fuel forecasting. We think there is a risk that using this consultation to try and verify TBE assumptions could just add further uncertainty into the TBE process.

### **Internal target drivers concept**

- 6.25 We wonder whether a concept of 'internal' target drivers could be useful. Internal target drivers would look at the extent to which issues internal to NG affect compressor fuel use.
- 6.26 For example, the impact of entry flow profiling, provision of exit flexibility, guaranteed pressures and CV Shrinkage might in theory, be explored in this way. Essentially, this could offer another way in which the internal trade-offs we have discussed in the previous section could be explored and articulated with sufficient clarity to justify their exclusion from the fuel minimisation objective.

## 7. UAG

*We believe it is important that an incentive on minimising UAG volumes is retained.*

*We think there is merit in providing NG with an additional, appropriately sized (i.e. fairly strong), long term incentive for reductions in UAG volumes and a measure relating to volatility might also be appropriate.*

*We do not believe that the introduction of a new scheme should necessarily require the separation of UAG volumes from the Shrinkage Procurement incentive, as this is not a straightforward issue, because of the way in which shrinkage volumes are combined, smoothed and procured together by the Shrinkage Provider.*

*If a new UAG specific scheme were developed, then to avoid NG being incentivised twice on the same volumes, NG could be provided with a 'volume pass-through' under the procurement incentive. However, we do not believe it is necessary or helpful to use a prompt reference price specifically for UAG volumes, and we explain why this is the case.*

*Due to the recognisable need for any new UAG specific scheme to be longer term than the procurement incentive, the associated rewards for NG could be provided through the SO Commodity Charge or even through a rate of return arrangement. One possibility could be to maintain a downside risk only through the procurement incentive, and provide an upside opportunity through a separately funded scheme.*

### **Background**

- 7.1 Unaccounted for gas has a number of potential causes mostly derived from meter under- or over-reading.
- 7.2 NG summarise potential causes of UAG as follows:-
  - Metering Errors
  - Cumulative Metering Uncertainty
  - Disparity in Metering Assurance Regimes
  - Disparity in Validation Procedures
  - Appropriateness of Validation Procedures
  - Operation of sites vs asset design parameters
  - Site Design issues
  - Impact of the linepack calculation
- 7.3 NG's basic premise in its consultation is that it does not have direct control over meter-related occurrences of UAG, and that overall it has a much lesser degree of control over UAG than it does over Compressor Fuel and CV Shrinkage. It sees the UAG as a largely random and unpredictable outturn rather than a quantity which it can forecast accurately.
- 7.4 Therefore it is seeking views as to whether a separate UAG incentive would be appropriate, and whether it should be incentivised in relation to activities it undertakes to improve UAG performance, rather than on outturn quantities.

### **Retained incentive on minimising UAG volumes**

- 7.5 We appreciate that NG does indeed have a lower degree of control over UAG, but as NG also acknowledges, it is best placed within the industry to monitor and tackle the issue.
- 7.6 At the simplest level, we believe it is very important that NG retains an incentive in relation to overall UAG volumes, as it is a significant quantity of gas which must be procured and which Shippers pay for. As described above in relation to compressor fuel, we do not believe that Shippers would wish to fund an arrangement in which NG was unconstrained in the amount of Shrinkage gas it procured,
- 7.7 However, the current incentive for UAG is diluted in its focus since it combines UAG with other volumes of shrinkage, and so does not appear to provide a sufficiently strong incentive for NG to be more pro-active in searching out and rectifying the root causes of UAG.
- 7.8 NG's description of the recent increase in UAG volumes is a concern and also supports the case for a more specific incentive.

### **A separate incentive for improvement in UAG performance ?**

- 7.9 We think there may be a good case for separately incentivising what would ideally be a step change improvement in UAG performance, and we think this might work best outside the shrinkage procurement incentive.
- 7.10 As NG points out, to effect a material impact on UAG would require activities and potentially investment by NG, and we expect this would require a longer timescale than the quarterly divided annual procurement scheme.
- 7.11 If it was considered appropriate to create a new, specific UAG incentive targeted at a material performance improvement, then we would expect NG to seek the exclusion of the UAG volumes from the Shrinkage procurement incentive.
- 7.12 This raises two issues:
- How to incentivise a specific UAG performance improvement under a new scheme
  - How to manage the exclusion of volumes from the existing procurement incentive, including the appropriate means of price indexation.

### **How to incentivise a specific UAG performance improvement ?**

- 7.13 In the same way that the relatively short term introduction of Information Quality incentives was used to trigger a particular performance improvement on Information Provision, we believe NG would be likely to respond to a significant one-off opportunity to benefit by achieving progress in this area.
- 7.14 NG has proposed a list of activities it could target, reproduced below:-
- Increased validation witnessing and associated QA activities
  - Development of monitoring systems and associated alarm techniques and systems

- Develop system modelling techniques and IS improvements for linepack allocation (we assume this includes the accuracy of the linepack calculation)
  - Work with meter owners/regulatory bodies to develop the following areas to ensure consistency and best practice – asset management policies, audit and maintenance regime, technical metering standards.
- 7.15 Although it would be possible to construct a scheme in which performance was based on the number of witnessing events, or the development of new modelling or analysis tools, we think that the most appropriate performance measure is likely to be one which is related to a reduction in absolute values UAG outturn and in addition, potentially a demonstrable reduction in the volatility of UAG.
- 7.16 Although this is likely to be a very challenging target given the nature of UAG, we think that any other measure would not create the appropriate incentive to ensure that performance improvement was achieved wherever it is possible to accomplish it, and could run the risk of inappropriately focusing activity in one area
- 7.17 If it was decided to construct this type of specific incentive for UAG, but to base performance measurement on activities or investments made rather than on volumes, then it would be important to keep UAG volumes within the procurement incentive.

#### **Funding for a separate UAG incentive**

- 7.18 We have asked NG to provide some indication of the likely costs in this area to help quantify the scale of an appropriate reward scheme. If there are significant investments to be made then the likely costs of these would be especially relevant.
- 7.19 We would envisage that, like the original information incentives, the reward for NG could come through additional payments under the SO Commodity Charge.
- 7.20 Recently, information incentives have incorporated a rate of return approach to provide an incentive for ongoing performance improvement, and this might also be an alternative method, particularly if there is significant investment to be made.
- 7.21 Given our view that an incentive on minimising volumes should be retained in some form, we think that there should be a downside risk for NG associated with this incentive arrangement.
- 7.22 Alternatively, a neat solution might be for any downside risk on the volumes to be incorporated under the procurement incentive, whilst an upside opportunity could be facilitated under this specific scheme.

#### **Exclusion of UAG volumes from the procurement incentive**

- 7.23 NG has also suggested that it might be appropriate to unbundle UAG volumes from the Shrinkage Procurement incentive and raises the question of whether prompt prices would be a more appropriate reference price for the procurement of UAG.
- 7.24 We have explained above that we think it is essential that a minimisation objective is retained on UAG, but if a specific scheme

such as the one we have outlined was adopted, then NG would have a case for separating the volumes from the procurement incentive.

- 7.25 Because of the way in which Shrinkage is administered, this is not a straightforward issue.
- 7.26 NG manages Shrinkage forecasting and procurement through the Shrinkage Provider Account which is a separate User account which was set up under the UNC for the purposes of enabling NG to purchase (and sell) shrinkage volumes.
- 7.27 As Shrinkage Provider:-
- NG uses its historical models of UAG (and CV shrinkage and compressor fuel) outturn to forecast shrinkage based on demand levels.
  - This information is translated into a shrinkage factor.
  - The shrinkage factor is applied daily to the forecast demand to determine the 'estimated' volume of shrinkage to be procured for that day.
  - After the day, actual shrinkage is 'assessed' (system inputs less outputs and less the change in linepack)
  - The difference between estimated and assessed shrinkage volumes, (and any volumes identified through reconciliation processes after the event) is rolled forward and included in the shrinkage factor for subsequent days as a correction factor
  - NG has discretion over the calculation of the correction factor, although it is generally 1/24<sup>th</sup> of the rolling sum of the difference
  - This means that the variances between 'estimated' and 'assessed' Shrinkage are smoothed out over subsequent days.

#### **Implications of the operation of the shrinkage provider account**

- 7.28 This process therefore significantly limits the impact of day to day 'error' in the shrinkage volume forecast<sup>8</sup>, and smoothes out random spikes in UAG by combining them with the other relatively predictable components of Shrinkage. It also sets a clear daily target against which the Shrinkage Provider must deliver.
- 7.29 Further, NG as Shrinkage Provider has freedom to buy and sell forwards and prompt gas to deliver the Shrinkage. This enables NG to buy the bulk of the requirement in advance, and the ability to buy and sell prompt provides it scope to manage its price risk effectively, since it can unwind forwards positions.
- 7.30 Combining UAG and Compressor Fuel procurement in this way in the operation of the Shrinkage Provider is probably efficient in terms of procurement approach and in terms of the internal costs of administering the processes, and it provides NG with a good degree of control in optimising both the price and volume of Shrinkage gas procured.

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<sup>8</sup> and also means that there is a degree of imperfection in the targeting between days of imbalance costs associated with Shrinkage Provider

- 7.31 Attempting to separate out the procurement of UAG volumes from the procurement of the remaining shrinkage could therefore expose shippers to much more volatile and uncontrollable costs, and that is aside from the administrative complexity of reorganising NGs internal management of the processes.
- 7.32 We also think it is unlikely that NG would in practice separate out the procurement of the UAG volumes anyway.

**Implications for the reference price – No need for change**

- 7.33 The upshot is that if there is a desire to allow a pass-through of the UAG volumes (in conjunction with a specific incentive on UAG volumes) then we think it would be appropriate to retain the current 75/25% GCRP price index as the target cost associated, rather than applying a prompt reference price to UAG outturn volumes.

**Problems with a prompt reference price**

- 7.34 If, for arguments sake, it was deemed necessary to use the prompt price as a reference price for UAG, then it would be necessary to reconsider the effect on the GCRP for the remaining quantities of Shrinkage.
- 7.35 The proposed application of 75/25% split between forwards and prompt price components in the GCRP has the effect of focusing NGs attention to ensuring that its prompt purchasing is efficient relative to the market.
- 7.36 Removing the UAG component, which will tend to be a big driver of the prompt purchasing requirement, would therefore provide NG with less cause for focus in relation to the prompt price in the rest of its shrinkage purchasing.

## 8. Electric compression

*We think it is unlikely that it would be appropriate (or necessary at this point) for NG to become a wholesale supplier of electricity.*

*In relation to the ECRP we think that the approach currently being used is probably broadly appropriate.*

*It is very important that the volumes required and price setting periods in the purchase contracts are transparent, given that the requirements will change depending on progress with the electric compression installation programme,*

*If/when NG wishes to purchase volumes of very prompt electricity then it would be important to include a daily index price (eg: Heren or Spectron) within the construction of the ECRP.*

### **Impact of electric compression installation programme**

- 8.1 NG is undergoing a programme of installing electric compression at a number of existing sites, in response to environmental legislation.
- 8.2 In its Initial Proposals consultation for incentives from April 2008, NG indicated that 5 compressor stations (out of a total of 25) on the NTS were due for electric installation within the year, but the timescales for the remaining installation programme are not clear.
- 8.3 Ofgem subsequently identified that there had been changes to the programme but the details have not been published.
- 8.4 This programme will affect a potentially very significant proportion of future shrinkage provision over which there is very little clear information in the public domain, particularly about the timing of the programme and the consequent timing of the build up of volumes of electricity required.
- 8.5 NG does not intend to remove the existing gas compression facilities and has said that it generally intends to continue to maintain the equipment on standby, rather than mothballing it. Maintaining equipment on standby will require a continual modest amount of gas.
- 8.6 The build up of volumes and pricing of electricity provision for the shrinkage incentive is therefore a significant issue with which Shippers should be actively concerned. We believe that the changeover programme to electric compression is an important and significant aspect of uncertainty for future Shrinkage incentive schemes.

### **Electric compression and the shrinkage incentive scheme**

- 8.7 NG currently acts as a retail purchaser in the electricity market, and purchases electricity through framework contracts under which the price can be fixed by the purchaser at a time of its choosing, ahead of the delivery date (e.g.: year ahead /month ahead /season ahead /day ahead). It will build up a profile of its requirements, and then contract 'blocks' of this requirement ahead of time, choosing the pricing period to best suit the level and volatility of the electricity requirement.
- 8.8 Using framework contracts enables NG to buy the energy at wholesale prices, but it must also pay retail uplift charges which we understand are fairly transparent and regulated cost pass through

items from the electricity provider, including delivery charges, losses etc.

- 8.9 The retail uplift on wholesale prices was set at 5.93 £/MWh for the current year. Multiplying this uplift by the electric compression target volumes set for 2008/2009 implies that the uplift will add something of the order of between £600k and £800k to the cost of electricity procurement for the current year. This amount will obviously increase with increasing volumes of electricity being procured.
- 8.10 The additional locational delivery costs are incurred (originally estimated at £3.2m in NG's Initial Proposals consultation for the April 08 incentives) and these are currently added as a 'pass through' cost from the supply contracts. It should be possible for the level of these charges to be accurately verified (by Ofgem scrutiny of the contracts, at least).

#### **NGas a wholesale supplier**

- 8.11 An alternative approach would see NG purchasing gas directly in the wholesale market, which would avoid the retail uplift, but would also no doubt incur significant set up costs. NG has not indicated what these might amount to in its current consultation.
- 8.12 NG is therefore seeking views on whether it should set itself up as a licensed electricity supplier in order to supply electricity to its own compressor fleet. It would only do this if it felt the costs provided appropriate benefits, and it states that it therefore believes a long term incentive would be required for this to be the case. The alternative NG suggests is funding of the activity through the next TPCR.
- 8.13 We believe NG being actively engaged in the wholesale electricity market is probably inappropriate, since the organisation already has a significant role in facilitating the operation of the wholesale market.
- 8.14 Further, there are already expert established wholesale providers with whom NG can contract and there enough wholesale providers to enable NG to be able to contract competitively.
- 8.15 We therefore see no reason why NG should set up as a wholesale supplier, and certainly not at this point in its evolving use of electricity for compression.

#### **Basis for ECRP**

- 8.16 NG is seeking views on how to construct a price index to be used as a target price for its volumes of shrinkage electricity.
- 8.17 We believe that the current approach of using framework contracts to buy electricity is likely to be the most cost effective way, certainly at the present time, for NG to buy electricity.
- 8.18 Under the framework agreement structure currently used for purchasing, NG fixes the price in advance, and within the parameters of the framework agreement will have significant discretion over the timing of when it fixes the price (and the quantities at the fixed price). For example it will probably currently use a mixture of year ahead and month ahead volumes and prices.

- 8.19 An ECRP should therefore be constructed on the basis of average published index (e.g. Heren) prices during the periods in which NG will be setting its prices (be they seasonal, annual or monthly)
- 8.20 It is therefore necessary to understand NG's intended requirements profile and the timing of the parameters of the framework contract in order to know how to set the ECRP appropriately. We understand this is the general approach taken by NG and Ofgem in setting the ECRP for this year, although we are not aware of the extent to which Ofgem scrutinised the details of the price setting periods, or quantities.<sup>9</sup>
- 8.21 Experience from this current year should help inform next years process. NG's accuracy in forecasting its electricity compression requirements is also likely to become an increasingly important issue.
- 8.22 We believe that, given this new operational flexibility NG is also likely to seek to buy some electricity volumes at very prompt (day ahead) prices. This may not be the case immediately, but it is much more likely with increasing capability to switch between fuel sources.
- 8.23 As with the gas GCRP, we believe that the target price index construction should match an efficient purchasing pattern reasonably closely in order to provide the most appropriate incentive target.
- 8.24 Therefore we think it is very important that NG's programme for electric compression installation is properly scrutinised, alongside NGs projected build up of the profile of electricity requirements and the details of its discretion for setting the prices (the reference periods) under its framework contracts
- 8.25 As and when NG intends to buy very prompt electricity (and it may already do so) then it would be appropriate to use a daily price index as well within the construction of the ECRP (eg Heren, Spectron Day Ahead Power Indices)
- 8.26 It should be established that NG cannot create incentive 'gaming' opportunities by advancing or delaying its installation programme. Annual/quarterly volume targets should help in this respect, and in any event we think setting the ECRP for multiple years would not be appropriate at this time.

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<sup>9</sup> Ofgem's final proposals appeared to only use a 1 month period as a reference price period (1 March to 31 March 2008) and it is not clear whether or not this was arbitrarily selected or was aligned to National Grid's price setting period.

**Appendix A**  
**Responses to NG consultation questions**

Question 1	<p><b><i>Do you believe an objective of the Residual Balancing Incentive should be to try and provoke NG to act to avoid Shippers transferring imbalances between gas days (thereby upholding the polluter pays principle) or to trade against the physical requirements of the system thereby potentially resolving imbalances on different gas days?</i></b></p> <p>We think that it is important that the linepack performance measure is retained, but that there may be a case for a small adjustment of the linepack tolerance level to help avoid late balancing actions causing price spikes when the system is physically able to cope, although there is not a great deal of evidence that this is big problem.</p>
Question 2	<p><b><i>Should the objective of the Residual Balancing incentive take account of accuracy of information from both NG and Shippers, particularly in relation to a daily demand forecasting element to the incentive and a mechanism by which accurate Shipper nominations could be incentivised?</i></b> <b><i>Do you have any views on how this could be achieved?</i></b></p> <p>We do not believe that this is necessary. Previous attempts (Incentivised Nominations Scheme) have failed, and there are existing incentives on information accuracy.</p>
Question 3	<p><b><i>What are the effects or impacts that Shippers experience resulting from NG's residual trading behaviours?</i></b></p> <p>We are aware of some concerns that occasional late balancing actions may be unnecessary physically, and that this might cause inefficient costs to be incurred to Shippers.</p>
Question 4	<p><b><i>Have the Residual Balancing Incentives delivered against their original objectives?</i></b></p> <p>Yes, we believe that they have, in broad terms</p>
Question 5	<p><b><i>Having weighed up the implications, do you believe the two elements of the Residual Balancing incentive should be retained and should their relative incentive properties be changed to promote either more or less residual balancing activity?</i></b></p> <p>We think that the principles as embodied by the linepack performance measure and the price performance measure should be retained. There may be a case for adjusting the tolerances and reward properties if the arrangements for linepack provision are altered.</p>

Question 6	<p><b><i>Given the operational requirement to increase linepack levels in periods of higher demands, what are your views in relation to setting an absolute linepack target level at the start of the day (rather than driving a return to opening linepack?)</i></b></p> <p>We think a sensible development of the regime would see a seasonally profiled daily absolute target for linepack being set through a pre-agreed mechanism, and with the day to day changes in the absolute target being provided for and accounted for through a separate NG User account, which could be the shrinkage provider account.</p> <p>NG could then source or dispose of gas to meet linepack change requirements separately from its residual balancing role. This could be expected to reduce the incidence of residual balancing actions compared with today's arrangements, in line with one of the key objectives of the incentive scheme.</p>
Question 7	<p><b><i>What are your views on adjusting financial risks/rewards based on the quality of information provided by market participants?</i></b></p> <p>We do not believe that this is necessary. Attempting to adjust the reward profile associated with balancing based on information accuracy could be extremely complex, and possibly counter-productive in detracting from the primary objective of the scheme.</p>
Question 8	<p><b><i>Do the incentive risk/reward parameters need reviewing on either PPM or Linepack in light of market changes since they were originally set?</i></b></p> <p>The concern about late balancing actions causing cost spikes could be addressed by a slight widening of the tolerance level and by curving the line of the incentive reward profile such that carrying forward larger imbalances are increasingly dis-incentivised.</p> <p>The parameters will need to be reviewed once issues of structure become clearer</p>
Question 9	<p><b><i>Do you have any views in relation to re-establishing this incentive for multiple years e.g. 3?</i></b></p> <p>Given the short term daily nature of the residual balancing activity we see little benefit in locking in the structure and parameters for a number of years. We therefore believe that provision should be made for review and potential amendment on an annual basis."</p>
Question 10	<p><b><i>If a linepack incentive is established, should a stepped payment structure be developed rather than the current linear structure which suggests an infinite balancing resolution?</i></b></p> <p>A stepped payment structure would introduce a 'cliff edge' within the incentive which we think would add uncertainty and volatility. We believe a curved structure may be appropriate to encourage certain behaviours.</p>

Question 11	<p><b><i>Do you believe that such a service concept would be an enhancement to the efficiency of the wholesale gas market?</i></b></p> <p>The product is not nearly well enough defined to be able to form a view about the likely impact on market efficiency. We are concerned about the potential interactions with residual balancing and have difficulty seeing how, at this stage, the product could be introduced in such a way that it would have value.</p>
Question 12	<p><b><i>Do you have any views on what the most appropriate mechanism/platform is for procuring this service?</i></b></p> <p>In any event, we think it is likely that third party provision of this type of service is likely to be preferable, to provide transparency and avoid NG being accused of manipulating the market.</p>
Question 13	<p><b><i>Please provide feedback on how the timing of the release of this service, and also on the product length, would affect its potential value to shippers.</i></b></p> <p>We think it is likely a day-to-day product is likely to be of most value to shippers when NG is least likely to be prepared to release it. For a weekend product, NG is likely to have to second guess the impact of releasing the product on the market.</p>
Question 14	<p><b><i>How would volumes available and frequency of availability affect your perception of the value of this service? Is there a de minimis level below which it is not worth pursuing?</i></b></p> <p>We think that it is quite possible that there is not likely to be sufficient product availability to make this worth pursuing.</p>
Question 15	<p><b><i>What market information would you want to see accompanying such a service?</i></b></p> <p>It is not possible to identify this specifically at this stage, but we agree it is an important issue which would need to be dealt with at the same time as product design</p>
Question 16	<p><b><i>Do you have any views on how to deal with the impact of transfer on PCLP?</i></b></p> <p>We think the general concept of providing both PCLP and separate information about quantities sold is likely to be sensible, but it is too early to be too specific.</p>

Question 17	<p><b>Would your organisation be interested in making use of such a service, and are there any other issues you wish to raise at this time?</b></p> <p>We are very concerned about the interactions with the daily balancing regime. It would be important to ensure that NGs rewards structure was aligned to desirable market outcomes.</p>
Question 18	<p><b>Fundamentally, should minimising compressor fuel use and therefore compressor operation remain an objective of the shrinkage incentive?</b></p> <p>Yes, it is an essential part of the cost minimization objective. Without a fuel minimisation objective, NG would be unconstrained in its use of fuel, and might operate inefficiently as a result. We do not think Shippers would wish to fund such an arrangement.</p>
Question 19	<p><b>Do you believe the 2008 TBE Base case at seasonal normal demand levels forms an appropriate set of supply and demand assumptions to input into a CFU forecasting model?</b></p> <p>We believe that the TBE process is well established and is likely to represent the best data available. Therefore we agree that this supply demand forecast should be used as the basis for compressor fuel forecasting. We think there is a risk that using this consultation to try and verify TBE assumptions could just add further uncertainty into the TBE process.</p>
Question 20	<p><b>Do you support the development of target drivers to move incentive target in line with key CFU drivers as an appropriate way of insulating against the most significant external factors? Would an effective target driver provide sufficient confidence to set an incentive for multiple years (e.g. 3 years)?</b></p> <p>We believe that a development of the current ‘target drivers’ approach is in general an appropriate means of adjusting the target for outturn events, thereby removing the scope for windfall gains or losses on volume under the Shrinkage incentive and increasing the focus of the incentive on the volumes which are not directly influenced by specific factors.</p> <p>We do not believe that there is yet sufficient information or experience associated with target drivers to set a long term incentive.</p>
Question 21	<p><b>Do you have any comments on the potential alternative modelling / target setting approaches for CFU target setting purposes outlined above?</b></p> <p>Developing the ‘target drivers’ for forecasting the central compressor fuel target within bands is appropriate at this time, in conjunction with input from network analysis and some additional statistical analysis.</p>

	<p>However, we have concerns that a significant amount of further network analysis information and statistical analysis than appears to have been undertaken to date is required to ensure that this approach is robust.</p>
Question 22	<p><b><i>Do you believe retaining a quarterly scheme enhances or reduces the effectiveness of the incentive compared with an annual scheme?</i></b></p> <p>Given that the intention is for the reference prices methodology to be agreed on a longer term basis, and given that the target drivers approach seeks to adjust the volume target based on outturn events, we think that the quarterly scheme is probably similar in effect to an annual scheme at this stage. Information on this years performance against quarterly would assist in assessing this.</p>
Question 23	<p><b><i>Given NG's indirect influence over UAG volumes, should the current shrinkage incentive be changed to incentivise and measure NG directly on the activities it undertakes which influence UAG, rather than on UAG outturn? Do you have any views on which activities should be targeted?</i></b></p> <p>It is important that an incentive on minimising volumes is retained. We think the primary performance measure should still be UAG volumes, and a measure relating to volatility might also be appropriate.</p>
Question 24	<p><b><i>Given the timescales needed to influence some of the UAG drivers do you think an incentive for UAG should be provided over a longer period e.g. 3 years?</i></b></p> <p>We think there is merit in providing NG with an additional, appropriately sized (ie fairly big), long term incentive for reductions in UAG volumes and/or volatility.</p>
Question 25	<p><b><i>We also invite views on whether Ofgem should additionally consider progressing financial incentives on meter owners directly to drive improvements in metering performance to potentially reduce UAG levels.</i></b></p> <p>We think it is likely to be a sensible for there to be some form of incentive and we will be interested to see shippers and Ofgem's views</p>
Question 26	<p><b><i>We would welcome views in relation to NG Gas becoming an electricity supplier to supply its electric compressors and if supported whether this should be encouraged by the incentive structure or funded at next TPCR.</i></b></p> <p>We do not believe it is appropriate (or necessary at this point) for NG to become a wholesale supplier of electricity.</p>

<p>Question 27</p>	<p><b><i>We would welcome views over whether a methodology based on a wholesale prices uplifted by a %age to represent retail costs is an appropriate form of benchmark going forward, and whether a methodology which tracks prices over a likely procurement period (as the GCRP does) is appropriate.</i></b></p> <p>In relation to the ECRP we think that the approach currently being used is probably broadly appropriate.</p> <p>It is very important that the volumes required and price setting periods in the purchase contracts are transparent, given that the requirements will change depending on progress with the electric compression installation programme,</p> <p>If/when NG wishes to purchase volumes of very prompt electricity then it would be important to include a daily index price (eg: Heren or Spectron) within the construction of the ECRP.</p>
<p>Question 28</p>	<p><b><i>We welcome views as to whether, due to their location specific nature, delivery charges should continue to be treated separately to the reference price methodology.</i></b></p> <p>Provided that the locational charges are a transparent pass through from the procurement contracts, then their current treatment appears sensible.</p>
<p>Question 29</p>	<p><b><i>We welcome suggestions by market participants (particularly those with electricity retail businesses) as to how an appropriate retail benchmark could be derived for a large industrial load of the order of 80MW and any relevant factors which should be considered.</i></b></p> <p>We are unaware of any specific retail benchmarks, but wonder if an arrangement with a group of brokers (like Utiyx) could be made to derive one.</p>
<p>Question 30</p>	<p><b><i>We welcome views on the appropriateness of deriving a different reference price to apply to outturn UAG volumes in the event NG is not directly incentivised on reducing UAG volumes.</i></b></p> <p>Separating UAG volumes from the Shrinkage Procurement incentive is not a straightforward issue, because of the way in which shrinkage volumes are combined, smoothed and procured together by the Shrinkage Provider.</p> <p>If a specific UAG scheme were developed, then to avoid NG being incentivised twice on the same volumes, it could be provided with a 'volume pass-through' under the procurement incentive.</p> <p>We do not believe it is necessary or helpful to use a prompt reference price specifically for these UAG volumes.</p>

Question 31	<p><b><i>Are there any other points that you would like to raise in relation to the setting of the Gas SO Incentives from April 2009?</i></b></p> <p>We do not think the energy imbalance transfer service is an issue for the incentives from April 09. It can be considered separately and on a different timescale, although consideration of associated incentive arrangements</p> <p>Our initial review suggests that the key issue appears to be the potential for an energy transfer product to adversely interact with NG's residual balancing role. Any future development of this concept would need to squarely address this important concern.</p>
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## Appendix B – Linepack and Balancing Action Analysis

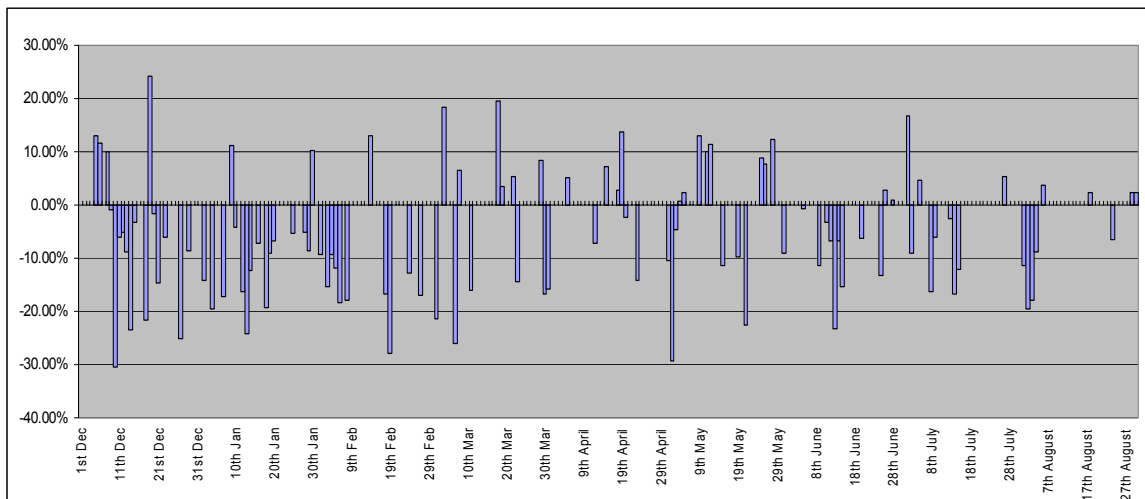
### 1. Relative Volume of Balancing Actions in the Market

NG state that its balancing volumes are 5% of annual volumes traded on the OCM. (NG Consultation para 18)

Although this is accurate as an annual figure, we believe it is misleading, particularly in the context of the current discussion about residual balancing, the effects of linepack tolerances in the regime, Polluter Pays and the potential introduction of an imbalance transfer service.

We think balancing actions on a day can represent a significant tranche of the total gas traded. The following chart illustrates that since December 2007, the volume of balancing actions has often been over 10% (especially on the sell side) and has been up to 20-30% reasonably frequently.

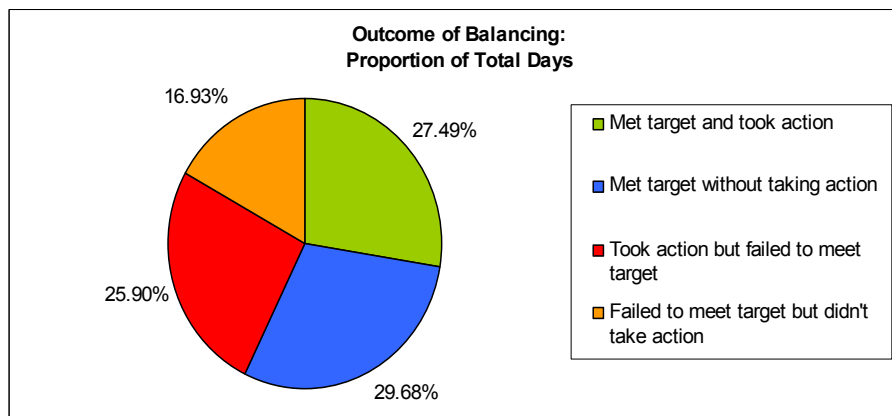
**Balancing Action Volume as a Percentage of Total Volume traded on OCM Dec 07 – Aug 08**



Data Source: *Heren*

### 2. Balancing action and success in the linepack incentive

We have reviewed the data provided by NG for this consultation to provide some general context for a discussion about the effect of the linepack incentive on NG's residual balancing behaviour. For example, how often do NG's balancing actions succeed in helping them meet their current target (linepack change of less than  $\pm 2.4$  mcm.) The chart below illustrates:

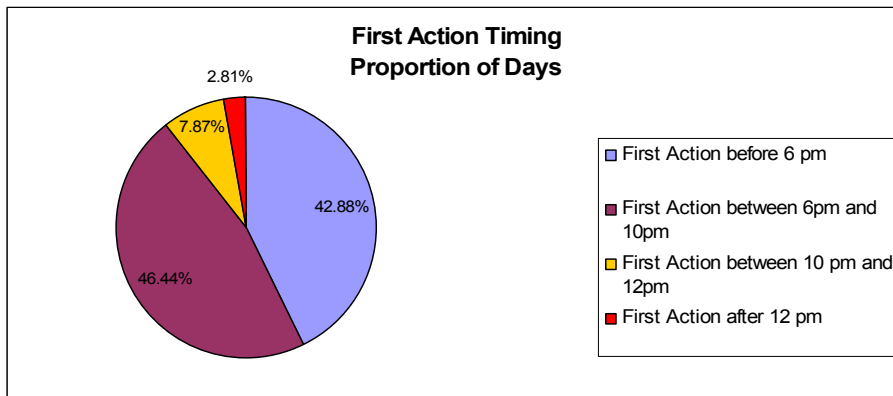


### 3. Late balancing actions

Concerns have been raised that NG on occasion takes a late balancing action in order to meet its incentive target, when in fact the system is physically relatively comfortable and that the result can be a spike in SMP prices (due to lower liquidity in the market overnight)

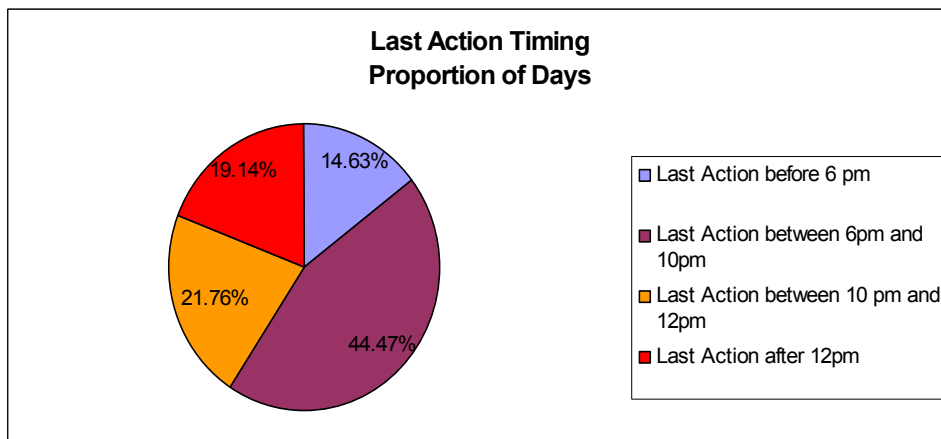
NG's data shows the following:-

#### When do NG first take balancing actions?



42% of the time NG begins taking action before 6pm

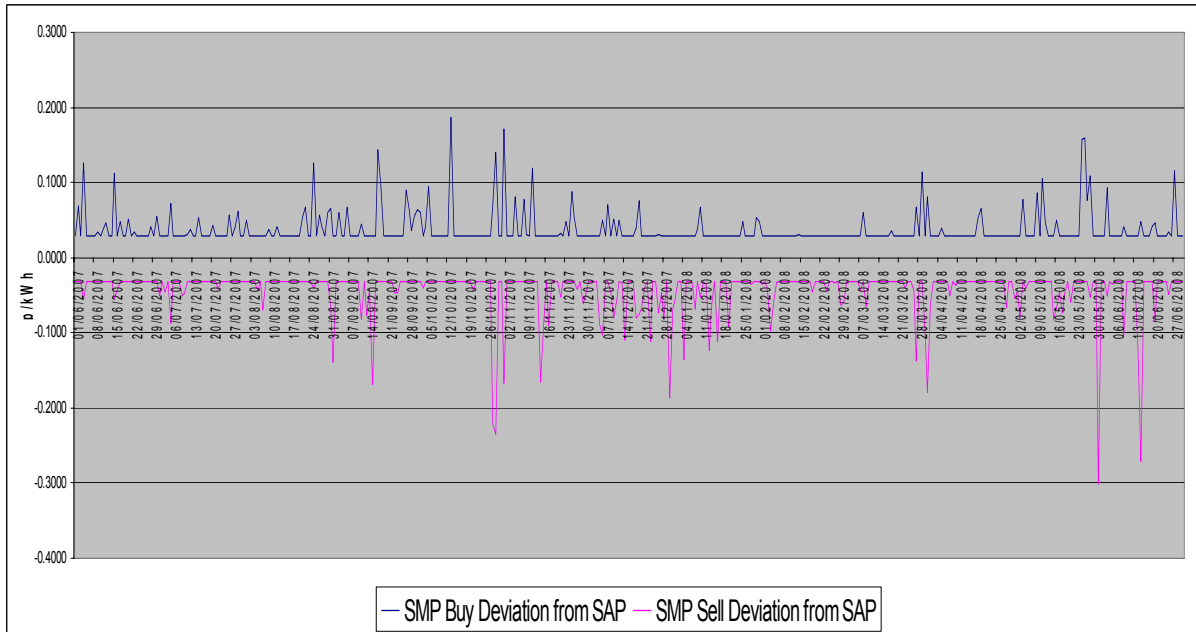
#### How often does NG take late balancing actions?



c.20% of the time NG takes an action after 12pm

We have also looked to see how frequently 'spiky' SMP prices are set:

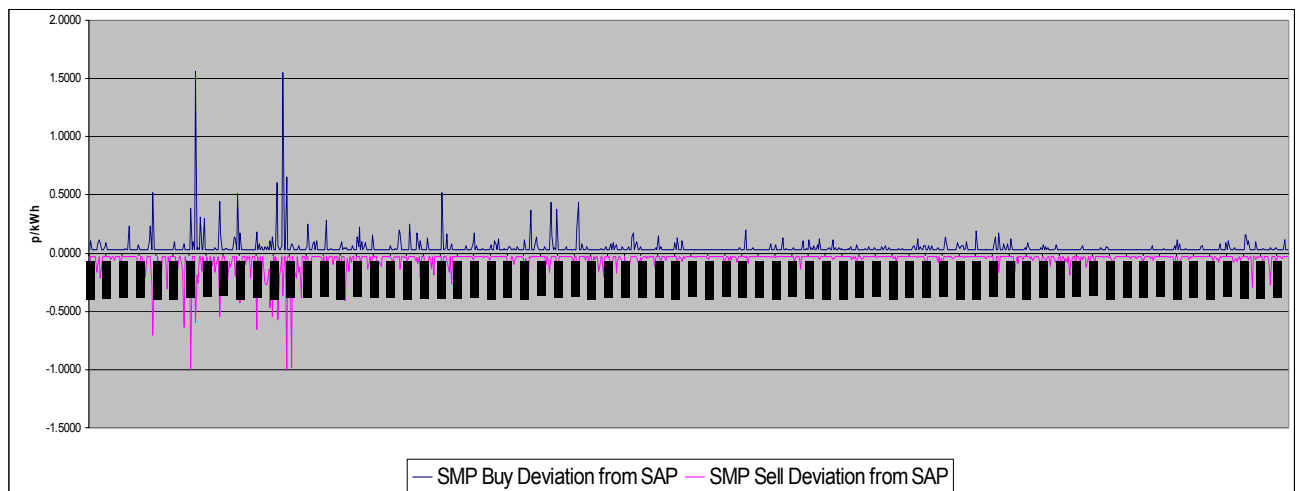
The following chart shows the deviation of SMP buy and SMP sell from SAP for the recent year June 2007 – June 2008



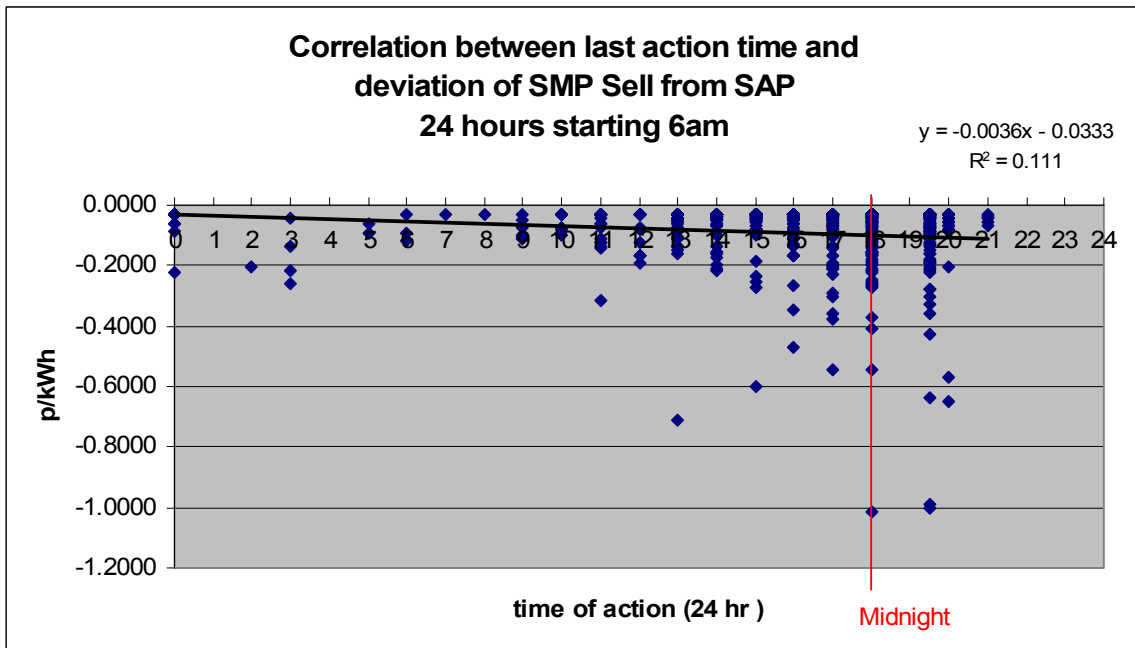
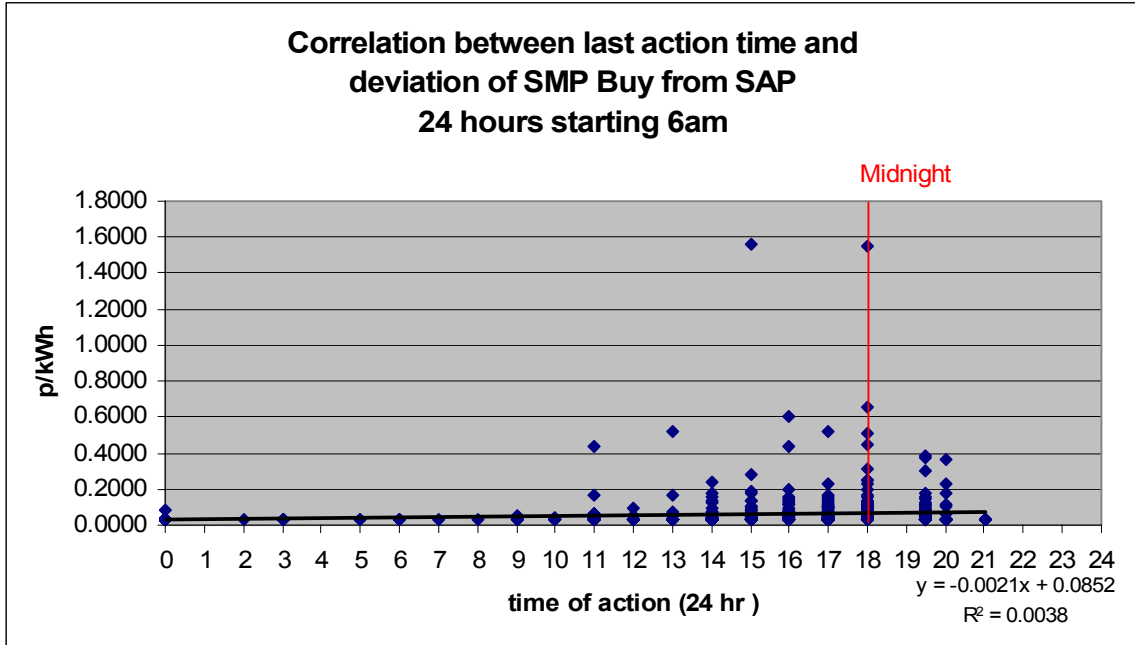
+0.3p/kWh to -0.4p/kWh

We believe this is not purely a recent concern, but also that the scale of the issue may have improved in recent years.

The chart below suggests that the scale of volatile spikes has reduced in recent years. The same deviation of SMP buy and sell as above is shown from October 2005 – June 2008, with the chart range of 2p/kWh to -1.5kWh.



The correlation between late balancing actions and price spikes is as shown below, for SMP buy and then SMP sell.



These charts illustrate that there are occasions when spiky SMP prices are set, but the average lines show that the majority of actions could be expected to set resultant SMP prices which only a modest deviation from SAP. The deviation from SAP is greater on the sell side.